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BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE
AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

AS the world's open spaces close up—forcing upon us not only stiffer competition but a firmer credit structure and easier capital—will not managerial ability rather than capital be the scarce commodity?—Page 110.

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BULLETIN OF THE

TAYLOR SOCIETY

AN INTERNATIONAL SOCIETY TO PROMOTE THE SCIENCE AND THE ART OF ADMINISTRATION AND OF MANAGEMENT

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Comment

EACH meeting of the Taylor Society presents a distinguishing characteristic which, for the time being, makes the meeting stand out in the minds of those in attendance as "the best meeting we have had." Comment which we have received suggests that the distinguishing feature of the Cambridge meeting (April 24-26) was—"All the papers were forward-looking papers; they raised fundamental questions to which industry must give serious consideration." The address by Mr. Dennison published in this issue is an example of the thinking which stimulated such a reaction.

IT IS unfortunate that all the papers of a meeting cannot be published together in the issue of the BULLETIN immediately following the meeting. The program of a meeting usually has a unity which it would be desirable to preserve in the publication of the papers. But the Society has followed the policy of presenting its papers in a medium of standard size issued regularly instead of in "Proceedings" of varying size and irregular issue—a policy which makes it necessary to distribute the papers of a meeting through several of the issues of the BULLETIN following the meeting. In this issue, for example, appear the last two papers of the January meeting and the first two papers of the April meeting. The BULLETIN is of a size and frequency to present during the calendar year all the papers of the year, but the issues of the winter months cannot present all the papers which are presented at meetings held during those months. Therefore, there is raised the issue of a bi-monthly periodical, a monthly periodical or an occasional "Proceedings." Have our members any new opinions on the question? A few years ago the consensus of opinion was in favor of Bulletins of regular issue and uniform size.

THE characteristic of the Cambridge meeting referred to in the first paragraph is indicative of the object, policy and effort of the Taylor Society. There are several management societies each doing a good work in its own way—and each contributing to the promotion of the better management movement. The particular object of the Taylor Society is to inspire its membership to think about the underlying principles and the long-run tendencies in management, the new problems and the new solutions. Reference to formulated principles or proved methods is not primarily for the purpose of emphasizing past achievements but primarily for the purpose of throwing light on the solution of new current or probable future problems of management. As one member has put it: "We have volunteered—and assume all the risks involved—to serve as scouts to explore the management terrain ahead." Another member in a letter about the Cambridge meeting has said: "All through the meeting I was deeply stirred by the scientific spirit and the professional attitude that was so constantly manifested there. And I said to myself, what a wonderful thing it would be if the public who think of business only as a game of ruthless grabbing and lawless aggression could have a glimpse of this meeting and see the other side of the shield! Now, they cannot do that, but it is up to the business administrator, through modern means of publicity, to get these facts across to them."

NO ONE can read the paper by Mr. Dennison, "Who Can Hire Management?", without receiving intellectual stimulation. It is not dogmatic but inquiring and suggestive. It raises many detail questions and the author was quite aware that most of these are matters for investigation and careful thinking. The entire paper is indicative of that "thinking out loud" going on in the minds of progressive executives who are inquiring into the real nature of management and into the bearing any new understanding of its real nature may have on the problems of organization goodwill and esprit, and on cooperative efficiency. Of fundamental importance is Mr. Dennison's conception that the essential nature of an enterprise is such that its organization cannot be represented by a straight-line organization chart, with impulse and authority flowing from top to bottom. Every person concerned in an enterprise, from owner to humblest worker, is part manager and part worker. We imagine Mr. Dennison's concept of an organization could be best presented graphically on the surface of a hollow globe, with points on that globe representing functions connected each with all others by strings showing relations among functions—each point a source of some degree of creative energy and by virtue of that fact a source of authority and influence as well as a center of responsibility.

AMONG the questions raised by Mr. Dennison is one of secondary importance—an inquiry "on the side" and not essential to his main argument—which interests us very much; that is his inquiry about the value of distinguishing between the functions *administration* and *management*. Says Mr. Dennison:

> This principle of relativity emphasizes that the men through whom any manager carries out his job are operatives, relative to him, and managers, relative to the men of whom they are in charge. Doesn't this throw some light upon the pet Taylor Society distinction between administration and management? . . . analysis of the dynamics of managing seems to offer no grounds for a fundamental distinction between administration and management . . .[1]

We agree with the first and second sentences of this excerpt, but not with the third. Mr. Dennison's paper does throw light upon the significance of the distinction between administration and management, but it does not remove the grounds for such a distinction, for the distinction is not dependent upon the assumption of exclusive sources of creative effort, impulse and authority—upon straight-line organization. The distinction is thoroughly consistent with Mr. Dennison's general ideas.

THE concept of a distinction between administration and management was first presented by the author of this editorial in the article Scientific Management in the "Encyclopedia Americana." In that article the following statement was made:

> A clear understanding of scientific management requires that management be not confused with administration. Management characterizes the organization and procedure through which collective effort is effected; administration characterizes those considerations and decisions which establish the purposes which create the need for management and those broad governing policies under which the management proceeds . . . This distinction between administration and management clearly in mind, it may be understood that administration is largely a process of forming judgments, may have serious social, political and other moral aspects, must be largely empirical and can utilize in but a limited way principles and laws determined by the scientific method of investigation; whereas management on the other hand is concerned with the relations and reactions of particular forms of organization, routine, materials, equipment, and physical and psychical conditions, may proceed upon principles determined by the scientific method of investigation, and is more or less mechanistic in its nature.[2]

The distinction was again brought to public attention by J. William Schulze in a paper before the May, 1920, meeting of the Taylor Society at Rochester, N. Y.

> "Administration"—the function of determining the objectives toward which an organization and its management are to strive, the facilities with which it is to work, and the governing policies and restrictions under which it must work.
>
> "Organization"—a combination of the necessary human beings, materials, tools, equipment, working space and appurtenances, brought together in systematic and effective correlation to accomplish some desired object.
>
> "Management"—the function or force responsible for directly conducting the organization towards the objective set up for it, and keeping it within the governing policies imposed upon it by the administrative officials.[3]

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[1] See p. 106.

[2] The "Encyclopedia Americana" article was reprinted in full in *Bulletin of the Taylor Society*, Vol. IV, No. 5, p. 10, October, 1919.

[3] *Bulletin of the Taylor Society*, Vol. V, No. 3, p. 120, June, 1920.

In Oliver Sheldon's "The Philosophy of Management"[4] the distinction is again drawn in a clear and convincing manner:

> There are three terms, constantly recurrent in any treatment of the structure of industry, which it is important to define with some exactitude—Administration, Management and Organization. Though frequently treated as almost synonymous, the three terms, if not easily separable, at any rate should convey quite distinct impressions. For the purpose of this book, they may be defined thus—
>
> *Administration* is the function in industry concerned in the determination of the corporate policy, the coordination of finance, production and distribution, the settlement of the compass of the organization, and the ultimate control of the executive.
>
> *Management* proper is the function in industry concerned in the execution of policy, within the limits set up by administration, and the employment of the organization for the particular objects set before it.
>
> *Organization* is the process of so combining the work which individuals or groups have to perform with the faculties necessary for its execution that the duties, so formed, provide the best channels for the efficient, systematic, positive, and coordinated application of the available effort.
>
> Organization is the formation of an effective machine; management, of an effective executive; administration, of an effective direction. Administration determines the organization; management uses it. Administration defines the goal; management strives towards it. Organization is the machine of management in its achievement of the ends determined by administration.

IT SHOULD be observed that in these definitions administration and management are defined as functions. As with respect to any function involved in the conduct of enterprise there is no implication who is or should be, or how many are or should be responsible for either administration or management. That is yet to be determined by just such inquiries as Mr. Dennison's. A person associated with others in an enterprise may be at the same time administrator, manager and detail executor (worker). It depends upon how responsibilities are assigned in any particular organization. We imagine that in his enterprise Mr. Dennison is primarily an administrator, secondarily a manager and remotely a detail executor; Mr. Rich is primarily a manager, secondarily an administrator and remotely a detail executor; a workman who is member of the shop executive committee is primarily a detail executor, secondarily a manager and remotely an administrator; a worker who has no committee duties is primarily a detail executor, remotely a manager and very remotely an administrator. The question is not one of persons; it is one of functions. The functions delineated in the above definitions clearly do exist in enterprise. Whether the terms chosen are the most suitable is another question which we do not consider here, although we think they are.

THESE functions exist not only in industrial enterprise but in any kind of enterprise; not only in large corporate enterprise but in the small or even sole enterprise; not only in an enterprise as a whole but in any distinguishable unit of it. In military affairs the Secretary of War and the General Staff are concerned primarily with administration; the field officers with management. In a church the deacons and pastor are concerned primarily with administration, and the pastor, Sunday-School superintendent, treasurer and secretary with management. In a club there is a function pertaining to the determination of general policy and another pertaining to the utilization of facilities for carrying out that policy. In the household the mistress is concerned with the administrative problem of general regulation of household affairs, the managerial problem of planning work, utilizing facilities, and frequently also with the operative problem of detail execution. The young graduate of the medical school and hospital service has the administrative problem of determining a general policy for his career (medical, surgical or narrower specialization, for instance), the managerial problem of planning and supervising his individual effort to carry out that policy, and the problem of detail execution in writing prescriptions, driving his car, making out bills, and so on. In the large enterprise there is an administrative and a managerial function for that enterprise as a whole, corresponding functions for each major department, and furthermore, corresponding functions for each subdivision down to the ultimate units. The United States Steel Corporation has its administrative and managerial functions, but so also does the smallest mimeographing unit in the remotest corner of that great enterprise. Cooperative or sole effort purposively to bring something to pass involves inherently the definition of purpose and formulation of general policies and plans, planning operations and the manipulation and coordination of facilities, and active individual effort. These things are independent of the nature of the enterprise, of persons, of size, or of whether the enterprise is but a unit of one larger than itself.

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[4] Prentice-Hall Company, New York (1923), pp. 31, 32.

Prague International Management Congress July 21 to 24, 1924

FORTY American delegates representing the American Engineering Council, the American Institute of Electrical Engineers, the American Management Association, The American Society of Mechanical Engineers, the National Association of Cost Accountants, the National Association of Office Managers, the Society of Industrial Engineers, and the Taylor Society will be in attendance at the Prague International Management Congress, July 21 to 24. In addition European members and American members of these various Societies now in Europe have indicated their intention of attending.

The Congress is open to all interested in management problems. Registration by letter to the Committee on American Participation, Room 611, 29 West 39th Street, or by Europeans, to the Committee in Prague (address "Pimco," Prague), will assure the provision of adequate accommodations for all who attend.

The committee in Prague reports that local arrangements are perfected. President Masaryk has accepted the patronage of the Congress and the Ministries of Public Works, National Defense, Public Education, Finances and Agriculture will be officially represented. The Jugoslav Government will be represented by their Minister at Prague.

The Congress has aroused intense interest in Russia, Poland, Jugoslavia and Rumania. The Academy of Work at Zagreb and the Association of Jugoslav Engineers and Architects at Belgrade are in charge of participation in Jugoslavia, as is the General Association of Rumanian Engineers for Rumania. Twenty-three delegates are expected from the Association of Polish Engineers, and Russia also will be represented.

The final program includes the following papers by Americans:

Scientific Management—Nature, Achievements and Tendencies

Fred J. Miller, Consultant in Management, New York, now with Public Service Commission of Pennsylvania.

Individual Relations in Industry

Henry C. Link, Lord & Taylor, New York.

Labor Relations in American Industry

E. S. Cowdrick, New York.

The Development of an Industrial Budgetary Control

Howard Coonley, Walworth Manufacturing Co., Boston, Mass.

Production Control

George D. Babcock, Holt Manufacturing Co., Peoria, Ill.

Sales Management—Principles and Methods of Planning and Controlling Operations

C. K. Woodridge, Dictaphone Sales Corporation, New York.

Management in the Coal Industry—Present Problems and Proposed Improvements

Sanford E. Thompson, The Thompson & Lichtner Co., Boston, Mass.

Some Problems of American Railway Management

Roy V. Wright, Managing Editor, Railway Age, New York.

City and State Management

A. R. Hatton, Office of the City Council, Cleveland, O.

The Problem of Efficient National Administration

W. F. Willoughby, Institute of Government Research, Washington, D. C.

Vocational Education

Channing Rice Dooley, Standard Oil Co., New York.

Advanced and Specialized Education for Commerce and Business Administration

George W. Coleman, Babson Institute, Babson Park, Mass.

Education for the Profession of Engineering

W. E. Wickenden, Society for the Promotion of Engineering Education, New York.

Industrial Research in the United States

Maurice Holland, National Research Council, New York.

Reorganization of the Department of Commerce

H. Lawrence Groves, Commercial Attache in Prague.

Economic Limitations to the Application of Machinery in Agriculture

H. R. Tolley, Bureau of Agricultural Economics, Department of Agriculture, Washington, D. C.

Coal Storage

L. W. Wallace, American Engineering Council, Washington, D. C.

(*Continued on page* 151)

Who Can Hire Management?[1]

What is "Managing"—Who Manages—
Who Can Best Choose Managers?

By **HENRY S. DENNISON**

President, Dennison Manufacturing Co., Framingham, Mass.

SUMMARY

A. What is to be managed?
  Three principal groups of human beings—
    Investors
    Customers
    Workers
  —in closed-circuit, dynamic relation to each other.

B. What do we mean by "managing"?
  A compound process, analyzable into
    Understanding
    Devising
    Persuading

C. Who are managers?
  Some part of each member of the working force.

D. How can they be chosen?

E. Who can choose them?
  Best—those who are to be their managers.

F. Who can choose the choosers?

IT IS easy to talk about management in terms so general that anyone can agree and anyone can disagree simply by shading different features of any inclusive definition or by choosing different fields of application. It takes a bit of managing, for example, to start a concern to be managed or to run a department of the government, or to work out a tax law, to fish a new trout brook, or to write a speech about management. To study out the managerial element of any of these tasks, or of others even more simple, has a value not to be sneezed at. But that we here may travel together as closely as possible—parting company if necessary rather on disagreements than on misunderstandings — I shall not only keep in mind a normal industrial company as the field of this discussion, but shall be fussy to describe somewhat peckishly just what are the essential features of a normal industrial concern as a management proposition. I shall, moreover, attempt to be equally precise—certainly much more precise than I have ever been before—in trying to say just what managing itself consists of.

A. What is to be Managed?

You will allow me, I am sure, to center attention on the people connected with the concern rather than its goods or its mechanical or chemical engineering problems, since these have had their days in the spotlight. From my point of view the concern will consist of groups of people in dynamic relation to each other. They will use equipments, methods, goods and services as means to their end. The point of view of J. A. Hobson in his recent book, "The Industrial System," is what I here propose to adopt: "At every point in the elaborate structure of industry each business cell is a complex psychical structure in which the intelligent will of the employer or manager applies stimulus and direction to the wills of workmen and owners of capital, planning their cooperative activity so as to meet the anticipated demands of groups of consumers, which demands themselves are acts of will responding to the pressure of conscious wants." Notice from this definition the hint that business is not a straight line process. Structurally it has no beginning and end; it is only for convenience in popular description and, moreover, at considerable risk that we say we begin by buying raw material and end by turning out finished goods. Any one concern has, of course, an historical beginning. Some have a good many beginnings, being reborn rather more often than the Bible calls for. But the task the concern is established to perform has no beginning,—all middle,—no end.

The errors in thinking of the activities of an established concern as occurring in a straight line are seri-

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[1] A paper presented at a meeting of the Taylor Society, Cambridge, Mass., April 24, 1924.

ous, and all the more serious because seldom baldly expressed, as indeed they would seldom stand bald expression. The assumptions are usually made, for example, that profit comes from the sale of goods, that a transaction ends at a sale and that all processes leading up to this final sale are secondary—disagreeable necessities as it were. If we cast out these half unconscious, all pervasive assumptions we see business not as a straight line but as a closed circuit. In this deeper insight goods do not go out the shipping room door—they are there transformed into a financial force, credit, which is one of the psychological components of the flow of force around the circuit. Working through and upon suppliers of material and suppliers of brain and hand labor, the essential force of industry, in one form or another, flows through the circuit to the suppliers of credit—the customers and from them through the circuit again. From this deeper insight profit is not made at any one point of the circuit but more or less uniformly throughout, much as if it were an induced current set up by the circuit as a whole. There is, then, no superior and inferior segment. Actually to gain potential in the direction of flow is of the same significance whether it comes from suppliers, workers or customers. To check or to pinch the flow at any point, by frictional losses or by resistances, whether it be among customers, suppliers, or the workers amounts to the same thing—a dissipation of energy with accompanying heat. To set up counter pressure (active opposition) in any sector reduces and may even reverse the current. This picture is more than fanciful—it has all the weaknesses of analogy and all the advantages of being a more accurate analogy than the ones we have commonly but unconsciously carried about with us. In essence it hammers home that the business process is primarily dynamic, continuous, unified.

The illustrations above have named customers, suppliers and workers. In the every-day flow of the business processes their participation is obvious. The participation of the investor is in most cases after the early stages of establishment less obvious but just as real. His participation may come to the surface of things only quarterly or even yearly, but the use of the facilities his funds have purchased is a daily matter and his return must be figured into every cost. It is useful to consider the investors as a distinct group, but suppliers and customers are in such a similar position from any such point of view as we are adopting, that I prefer hereafter to group them both under the one head of "customers."

We have, then, concerned in the closed circuit of a business process three principal groups of human beings: the customers, who exchange merchandise for money or money for merchandise; the workers, who exchange activities for money; and the investors, who exchange present money or credit for future money or credit.

Here, then, is a picture—generalized—of the sort of business concern which I am going to try to hold in mind as that which is to be managed by management—a closed and intimately intermeshed circuit of psychological forces, continuous, dynamic, through and among three principal groups of human beings—investors, workers, customers—using as conductors the equipments, materials, services and money which to external appearances constitute the reality of the company.

B. What Do We Mean by "Managing"?

What is it, then, to manage this reality? If I were to stick to the same metaphor now I might say that management is the battery or dynamo which furnishes potential to keep the circuit flowing and to overcome the resistances involved. But now that we are turning to an examination of the management function we shall have to set up a new picture of its elements, just as we should have to make a drawing of a dynamo more detailed than just a circle with a letter "D" in it if it is the dynamo we wish to know more about rather than the circuit to which it is hitched up. We have, as a matter of fact, had talk enough about management as a sort of "M" in a circle. The daily relation which most of us hold to management has led us into an assumption that we know all about it, in much the same way that being men and leading men's lives leads us to the false assumption that we know men. Moreover, there is a dangerous double meaning creeping in again and again through the word management referring in one breath to a group of men, and in the next breath to an activity or function. For the next step of this discussion, therefore, I am going to drop the word "management" and ask again: what does *managing* consist of—what do you mean—manage?

1. Management a Compound Process

Managing is not simple but a compound function. Let us get out of our heads once and for all the notion which our days under parental authority make so common, that managing consists in any significant degree in giving orders. Order giving is to foremanship what order taking is to salesmanship, a part of the whole process of no outstanding significance. It is the element, however, which can most easily assume the appearance of predominant if not exclusive significance, and thus lead to wrong emphasis and erroneous inferences. The fact that to a superficial mind managing is first thought of as giving orders has done its full share towards the common underestimate of the importance of the real factors in the function of managing.

In cutting managing up into its more simple elements let us take a case first of the man who undertakes some project alone, say fishing a trout stream or writing this paper. I must warn you here to cut free from too strict an order of sequence. For the most part in managing there is no real beginning or end, and its elements do not follow along in careful consecutive order, element No. 1 being complete before element No. 2 enters upon the scene. While any description, because of the limitations of language, proceeds of necessity along but one dimension, managing like all reality takes place under conditions of three and possibly four dimensions, which take its elements entirely out of mere lineal sequences. An individual, then, would more or less consciously start his job by picturing the goal or possible goals. He would lay out before himself the factors of the case, arranging and rearranging such factors with the goal in mind. Then he would devise ways and means. All this in the simpler projects would be very rapid and almost unconscious, but if the job be pictured as complicated enough and new enough these three factors would stand out rather clearly.

The fourth step with our lone individual is that, having devised his ways and means, he must persuade himself to go about it and then he must start in. This last step in his activity can no longer be called managing; he is in this aspect an operative. But then as he critically observes his own work to see that he has carried it out according to the plan, and notes the results as successful or otherwise, he is again managing.

Now let us apply this same analysis to our typical case of managing in a normal industrial concern; and for safety, to avoid assuming beginnings and endings, let us start our list of factors when the productive operation is actually under way. Let me remind you again that these elements are not strictly in sequence—they are often all going on together as if in different planes; one would usually run ahead a way into element number two and then go back to revise or review or perfect number one and then again go on, and so for perhaps many times.

2. Job Analysis of Managing

Understanding
- (f) Observing
  (Watching the operation, supervising, includes selecting what to observe and method of recording, mental or physical.)
- (g) Evaluating
  (Interpreting the observed facts; relating them to other facts and to policies; determining relative significance.)

Devising
- (h) Conceiving
  (Imaging possibilities—goals.)
- (i) Analyzing
  (Analyzing goal and possibilities and relating observed and evaluated facts thereto.)
- (j) Contriving
  (Determining methods, means, incentives, operatives.)

Persuading
- Directing
  (Giving orders—in absolute strictness not managing, but operating.)
- (k) Teaching
  (Establishing the necessary understandings of goals, means, methods, and incentives.)
- (l) Inducing
  (Inspiring — "instructing the desires"; the emotional partner to teaching.)

Note 1: The process called coordination is composed of parts of j, k, and l.

Note 2: Complaints, disclosed faults, are results of (f); (g) is their acceptance and appreciation; (h) "proposes" their correction.

The extent to which this analysis of the dynamics of managing is imperfect in detail I shall be glad to have made the subject of later special study and discussion. There may be too many questions as to the propriety of the method itself to make it profitable to take the time now for a discussion of the details of its application. To me this cutting up of management into its component forces, instead of the more usual method of studying the different projects to which managing applies itself, throws an entirely different light on the whole situation. It shows up, for example, that everybody in the industry does some managing—that the elevator man can't decide what floor to stop at if two bells ring without going through the process I have described as managing. When we provide for putting into actual current practice any part of this managerial process, say, for example, the divising of incentives, we must recognize that this devising is a managerial process every component element of which must be gone through explicitly or implicitly if it is to be fully accomplished.

Take for example establishing an understanding—giving instructions—a part of the managerial process yet in itself a complete managerial task. The results of previous instruction of employees must be observed; the significant facts selected and put down. In what general direction a better job of instruction might be attained must be visualized, previous experience analyzed with this visualized goal in mind, and better, more effective schemes than the old actually devised; and then these new methods must be themselves got across to the people who are to instruct the employees.

3. Job Analysis of Managing Applied to Actual Tasks of Management

A. Maintaining Quality of Automatic Printers (by Foremen)

(All these steps are going on continuously—there is no beginning and no end to this task—and several series go on simultaneously.)

Understanding

(f) Observing

(The quality of each printer is rated and noted in a book daily. Records are kept of all errors and complaints. The causes of poor quality are observed.)

(g) Evaluating

(The quality being produced is constantly being evaluated against the previous performance of the department, the performance of the best workmen, and the possibilities of the machines.)

Devising

(h) Conceiving

(An image of "quality work" for the department as a whole is constantly kept in mind.)

(i) Analyzing

(When the individual job falls below the "quality image," the points in which it is "sub-quality" and the causes which make it "sub-quality" are analyzed.)

(j) Contriving

(Means are devised to remedy the defects and remove their causes by changing methods, changing the design, assigning the work to a better man, or increasing the attention of the workman to the production of quality work.)

Persuading

Directing

(When new methods or new assignments are necessary, instructions are given accordingly to order writers, etc.)

(k) Teaching

(When new methods are tried out the worker is taught how to use them. When better workmanship is needed, he is shown how the better work can be done.)

(l) Inducing

(When the man has neglected quality, he is persuaded to strive to improve his quality, sometimes by explanation of the importance of quality, sometimes by comparison with the quality of others, sometimes by financial or other inducements, potential discharge, chance of promotion depending on quality, etc.)

B. Curtailing Labor Waste in an Automatic Machine Department

(Note: In this department machines were operated by girls and cared for by men "adjusters" who made the changes required for different orders, repaired minor breakages, etc. When any machine was "down" for adjustment or repairs, the girl who operated the machine went to "the table" where she wrapped packages. The girls were paid piece rates while operating the machines and were given their piece rate average as time payment when at "the table.")

Understanding

(f) Observing

(The large number of girls constantly at "the table" was noticed in connection with general supervision. The causes for this were discovered by investigating cases. Records of the amount of "table time" by causes were established.)

(g) Evaluating

(The labor cost to company while a girl is at "the table" was figured and its importance disclosed.)

Devising

(h) Conceiving

(The ideal condition was conceived to be having adjusters always busy, girls always running machines, machines never idle except when being adjusted.)

(i) Analyzing

(This condition was found on analysis to involve the following conditions: If adjusters are always to be busy, they must always be working on some machine; if the girls are not to go on "the table," there must be no girl for any machines which are being adjusted; if the machines are never to be idle, there must be enough adjusters to work on all machines that are "down" at all times and therefore at times more adjusters than are necessary.)

DEVISING (continued)	(j) CONTRIVING (A plan was evolved to satisfy these conditions by assigning one adjuster with three girls to each group of four machines, rotating the girls from machine to machine, and having the adjuster operate one machine whenever all four were in operation.
PERSUADING	DIRECTING (Full instructions to govern the new plan were worked out with the foremen and issued to girls and instructors.) (k) TEACHING (Foremen and adjusters were taught how to work new plan and how to handle emergency situations. The plan was fully explained to the girls.) (l) INDUCING (Adjusters and girls were shown how they would be affected by the plan, the reasons for it, and they were induced to try it out.)

(Note: This entire process of observing, devising and persuading was carried on continuously, with slight modifications, throughout the entire installation of the plan and its first months of operation.)

If the claim be brought forth that this method of analysis is too complex, I shall insist that the industrial situation is immensely complex and each member of the industrial concern is himself complex, and that we have suffered more bitterly so far from oversimplifications than complex analyses. Management, moreover, has so often been very partial, incomplete and ineffective through the neglect of some of its necessary components that a check list, better undoubtedly and more concise and accurate than I have suggested, will have its own considerable practical value. How much that goes by the name of management do we all know which fails to give any adequate study to the available, applicable facts? How much management has attempted in anything more than the most half-hearted way, to picture the goals it meant to reach? And how much has failed utterly in getting across to its executives or its employees a real understanding and, hence, a real ability to put into effect its methods?

4. Tools of Management

But it is as a great deal more than a useful check list that I am placing before you this analysis. I mean it to supplement the too habitual concentration of attention on the tools through which we manage rather than the function itself. Systems, machines, rules, authority, incentive plans, are devices through which the managing function can accomplish its ends. The best of all these devices—the finest machines to the most perfect profit sharing plan—are fully capable of lying idle; mismanaged they are capable of doing harm. Precisely as a mechanical device in the typical case saves hand labor but calls for brain labor—and the more hand labor it saves, often the higher grade of brain labor it requires—so with management machinery. The higher the perfection of organization, the greater the degree of ability it takes to run it—and well run, the greater its measure of success.

5. Authority Versus Management

Merely having a management, moreover, a head office with general manager or a crew of officials, is in itself of no importance unless they go through the complete managing process of understanding, of ingenious devising and effective persuasion. This analysis throws into its own insignificant position the mere giving of orders, or the making or enforcing of rules. Laws and rules, I say, are devices—tools which can be effectively or ineffectively constructed, effectively or ineffectively used. Attempting to manage without rules is doing by hand what might be better done by machine; attempting to manage entirely through rules—to let rules manage for you—is to overmechanize and to suffer from rigidity and from oppressive psychological fixed charges. If any form of analysis can make American management see that rules have no virtue in and of themselves, and that on the other hand to do without them is boneheadedly to refuse mechanical assistance, such an analysis will be deeply worth-while. It should make us see the true distinction between rules and *cases* and realize that one man's rules are another man's cases.

This analysis also would make us see more clearly that "authority" is no living part of managing at all, but a tool or device which managing uses. In the ordinary day's work *having* authority is too likely to be glorified into a matter of importance, whereas *using* authority is the only real matter of importance. In a similar way we usually miscalcualte the function of "responsibility," it being strictly speaking in the nature of an incentive; and like other incentives it must be correctly calculated to its end and used with great skill. "To hold a man responsible for results" is nothing more than a form of words and a very harmful form of words at that, unless he who "holds" is accurately and specifically acquainted with what "results" should be—in other words, with proper standards of performance. With still more radical effect this analysis makes us see profits not as the end and final goal of all things, but as also an incentive—an incentive applied to one of the groups in a business, and capable of inciting certain desired results, but not all desired results.

6. Management and Administration

The principle of relativity in social science emphasizes that the men through whom any manager carries out his job are operatives relative to him, and may be managers relative to the men of whom they are in charge. Doesn't this throw some light upon the pet Taylor Society distinction between administration and management? Can't you, as a matter of fact, show a distinction almost anywhere along the line, saying, for example, that the division superintendent in the factory "lays down the object for which his organization, his foremen are to strive, and the broader policies under which they are to operate?"—while the management of the division becomes the "force which leads, guides, and directs the organization in the accomplishment of this predetermined object."[2] Isn't it easy to fool ourselves pretty deeply on that word "policies"? In what, except perhaps in "loftiness," does policy differ from any managerial determination promulgated to the next lower group of executives or at last to the individual operatives?

Unconsciously, I am afraid we tend to call it "administration" if the treasurer and the stockholders and the financial interests generally are a part, management if they are not. This is of a piece with the human notion that the financial problems are somehow of a higher order than any other business problems, because without sufficient financial strength a concern must die—which is as much as to say that the essential part of life is breathing. What has misled us is the fact that financial interests frequently do stand on a plane by themselves because voting control has so often run with the financial interest.

Analysis of the dynamics of managing seem to me to offer no grounds for a fundamental distinction between administration and management; for even the workmanlike definition, for which I am indebted to Mr. Rich, that administration has to do with policies fixed over a considerable period while management is concerned with the problems of week to week, turns out to be a relative differentiation rather than a fundamental distinction.

C. Who Are Managers?

If managing, then, is a compound process made up of observation, devising, and instruction, who is to do the managing? Let me repeat, in answer, that everybody's got to do some of it, even to the man working under the most minute instruction card. Management is not a sacred function or the sole prerogative, for all time, of the sons of Levi. Some will do more and some less, but none above the grade of moron is entirely without it, nor is any so-called manager without his operating minutes and hours. In fact, the only case of the 100 per cent manager on record is Sherlock Holmes's brother Mycroft.

So if we use the word "management" to describe those people who manage and then ask ourselves for a strict answer to the question "Who is management?" we must find ourselves forced to answer that while the managing factor is heavily graduated from almost zero to almost 100 per cent among separate individuals, it nevertheless finds itself to all practical purposes coterminous with the whole active organization. Incidentally it appears that the present intense interest in management sharing through works councils or other collective devices is a more or less unconscious attempt to devise a method of getting the advantage of much more of the managing abilities in the total group than the old one-man or autocratic structure could get, especially those related to observation and instruction. A still more serious and scientific concentration upon this wide spread of the managing function will inevitably inspire the devising of much more effective examples of management sharing methods than any we now know of.

D. How Can Managers be Chosen?

Since everyone shares to some degree in managerial authority, the question of hiring management becomes in its first form the general question of choosing and correctly assigning functions. We human beings don't fit ourselves into place in any organized structure as do molecules during the process of crystalization, but we must be placed and our jobs designated. Now it is not at all a difficult matter to hire and place hands, but we have just seen that hands grade rapidly into heads, that operatives of the sophomore class have managerial attributes; and the hiring difficulties advance in geometrical proportion to the managerial factor. We might, in fact, ask ourselves whether in any real and significant sense we can and ever do really hire heads?

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[2] Quoted from J. William Schulze, "Planning Applied to Administration," *Bulletin of the Taylor Society*, Vol. V, No. 3, June, 1920.

1. Psychology an Aid in Choosing

So, having the primary group, operatives, how can we choose from among them or elsewhere the group of people, such for example as junior foremen, whose proportion of managerial work is so large as to be of major importance. Well, just here as I suppose, taken by and large, we have done our one worst job in the industrial world. Yet there has been a certain blundering naturalness to the old method of picking entries into the managerial class, part by inheritance, part by real ability, part by good looks and fine manners, which must warn us to be patient and thorough with the testing of any more artificial methods. I mean, of course, that psychology must come to our aid but that—John Williams to the contrary notwithstanding—we must use the same conservative care in putting its suggestions into practice as we would in preparing for the bulk manufacture of a new explosive. This care will probably discourage some useful experimenting, but those who see deeply into the more fundamental needs of business today will insist that experimenting shall go on and in ever increasing scope.

2. What Faculties Are Necessary to Choose Managers?

But, after all, with all the help that a psychologist can be expected to give us, what knowledge and ability must a group of men have who out of the whole group of operatives can designate the right man for the right managerial jobs, and from among them choose those whose work shall be still more intensively managerial? Clearly for such work all the knowledge possible of the candidates is desirable, but a very real knowledge of the managerial tasks that it is proposed to put upon them is also necessary. It is natural, therefore, that the choosing or designation should be done for the most part by the managerial unit which is planning the task and providing for its operation. We have found from specific experience that while all sorts of help can be offered by an employment manager, especially in the hiring of hands, yet the sense of final choice must rest with the manager himself, and that, again, when it comes to choosing junior managers, records, advice and specialized assistance are of value in the final choosing, but it is best carried through by the senior manager in charge. I think a very great majority of practical business men would say without hesitation that wisely to choose foremen or assistant superintendents one should be right on the job in daily direct contact with the situation—a resident. But if each managerial unit should for the most part choose the instruments whom he must instruct and inspire to carry out his actual purposes, who is to choose the last chooser?

E. Who Can Choose Managers?

Of course there is a sense in which it can be said that there is no absolutely final power in any industrial operating group. Circumstances, the market demands of customers, the law, all have their say heavily to condition the decisions of any board of directors or sole owner. Yet within the group itself there *is* a last chooser of methods and men. In our typical industrial concern this will, of course, be the board of directors. The board may have the assistance of the president or general manager—or of an executive committee, or operating committee—but it, itself, will choose these helpers and must therefore in the long run get the sort of help it is looking for.

1. Clear Away Preconceptions

Certain notions almost habitual with us, and perpetually clustering about the subject of industrial control, must here be set aside or in any case very critically examined if they are to be allowed to apply. Such are the notions that gather about ownership—the extreme case of which is the age-long feeling that one has a right to do as he pleases with his own—a right which has never existed in untrammeled fashion and is subject to more and more limitation as society becomes closer knit and more complex. Likewise the notions that gather about the taking of a risk, which in itself very properly gives warrant for a certain amount of control to avoid the extremes of risk—but since risk seldom leaps suddenly from the extreme to the moderate, we very commonly hear claims to the need of control on account of risk attributed to cases where the risk factor has become so moderate as to be virtually negligible.

We must separate also in our minds very carefully the investor-manager, the worker-owner into two different men. A common source of misunderstanding arises from carrying over the case of the man who has invested his money and his time and energy in a business to apply to a case where the investor and worker groups are for all intents and purposes distinct. It is extremely necessary that these warnings be given before we can examine the main question as to who is best fitted to choose the ultimate chooser, who is best fitted to choose the board of directors, who, in other words, can best hire management. Let us examine some characteristics of the three principal

SOME RELATIONS OF THE THREE PRINCIPAL GROUPS TO THE CONCERN AS A WHOLE

	INVESTORS	WORKERS	CUSTOMERS
A SPECIAL INTEREST	In net margin	In wages and salaries	In price
AN INDIRECT INTEREST	In price and pay	In margin and price	In margin and pay (very remote)
KNOWLEDGE OF	General principles only	Specific internal conditions	Product only
RISK	Greatest	Less	Least
CONTRIBUTION TO SUCCESS	Static—or only active periodically	Continuous	Continuous for dealers and suppliers—static or periodic for others
POSSIBILITIES OF INCENTIVE TO CONTRIBUTION	Small	Great	Medium
RESIDENCE	Non-Resident	Resident	Non-Resident

Figure 1.

groups in the industrial concern—the investors, the workers and the customers. In tabular form their principal relations to the concern as a whole can be put as in Figure 1.

2. Investors' Choice

Glancing at these relations to the concern, let us think of each of the groups as possible choosers of the board of directors. Just now it is the investors—a development wholly natural on account of the immense need and comparative scarcity of money capital since the industrial revolution, and until recent years. Running parallel to it, the call for investment to develop the civilization of the world made capital *the* commodity for which one must sell his soul if need be. Results as a whole are obviously workable, with evils arising out of non-residence, relative ignorance of the concern's operations, a lack of any great possibility of continuous contribution to the progress of the concern, and the lack of possible continuous incentive; and the rather negative incentive towards careful management, which arises out of the risk factor and works through fear. Investors have their special interest, as each of the groups has, and by virtue of it, tend to pay as low wages to workers and as low prices to suppliers as possible and to make prices to consumers as large as possible, so that the margin may be maximum.

While it seems very unlikely that any other form of control would have done better during the days of intense pioneering which followed the industrial revolution there are, nevertheless, visible all around us now perfectly obvious cases of the handicaps under which this system suffers. There are many sad cases of inherited control; there are still straw boards of directors like that which led the New Haven road, over fifteen years ago, on so silly a course; there is a serious lack of appreciation of customers' indirect interest or workers' real interests; there is far too much tendency to count the dollar as the only score in the game, far too little knowledge and interest in operation and too much in stock marketing. Most of these very handicaps were much less serious in the days of rapid growth and rough pioneering than they can now be expected to be in the coming days of greater stability and slower and more laborious progress.

3. Customers' Choice

Yet if we turn to the possibility of control by customers we find in the generalized case just about the same group of handicaps. They have their special interest; they have only a distant knowledge and slight chance for continuous contribution towards success. They are again usually non-residents. Their special interest would lead them, as it has led investors, to deal as closely with the other two groups as circumstances would allow, to pay both the workers and the investors the least that would gain such services from them as are needed. It is true, prices would tend to be lower; and not a few folk have been led by the lure of over-simplification to paint a complete Utopia built upon low prices. This is the same kind of logical error that the investors have always indulged in, when they have assumed that all the elements of a wholly satisfactory social system would somehow or other spring up if only ownership of property was made secure and investment highly profitable. The situation is far too complex to have Henry Ford's doctrine of mass production a complete panacea, an answer to it all, any more than any other panacea has ever proved to be a complete answer. We have examples of consumer control in the cooperatives and in cases of government management. We have so far found both to be practicable only in very special, narrowly limited circumstances.

4. Workers' Choice

When we turn to control by the working force in a concern, and by working force please remember that I mean all who work, whether their primary work is managing or manual labor, we face a somewhat different picture. They are in residence, they have within the total of their group about as much inside knowledge as exists; they have every imaginable possibility of constructive contribution and a wide range of special incentives can be invented to secure it. Their risk is moderate, they have a certain risky vested interest in their jobs—not so great as to cause the extremes of nervous fear we find among investors, nor so little as to fail as a motivating force. Their special interest would be to pay investors as little as possible and make prices as high as possible, but they are held a bit in check by an understanding of the two other groups rather more complete and deeper than investors or customers could gain of their two partners.

Some years ago it would have been considered entirely fanciful to be speculating about the sober, businesslike possibility of finding some day the work force in the same relation to the concern that the investors have so long held. But now not only have we a few special cases of experiment in individual concerns, but great social groups in Russia, Italy, England, and Germany have been performing experiments before our eyes. In Russia and Italy we have the less significant cases for purposes of this particular discussion, for both attempted not to control or hire management but to fire them and, by making believe fill their places themselves, actually to do without management. If by any sudden shift workers' control comes in any country, the lessons of Russia and Italy are probably sufficient to prevent a repetition of this particular human foolishness. But there is no reason to believe that workers' control might not follow closely the example that has been set it by investors' control and hire a management which shall attempt not to effect a dynamic coordination, a cooperation among the three groups in industry—but to cramp the other two as much as it can get away with and skim off all possible for itself. Judging by human history this course is very likely to be followed somewhere, if conditions in any way allow it. Yet by virtue of the fact that the movement of investment capital is many times more fluid and sensitive than is the labor supply, such a course of exploitation would show up its weaknesses very early.

On the other hand, there is among the worker force the opportunity for more sensitive appreciation and understanding of the nature and interests of the other two groups, so that the chance is there for development of managerial methods of a more nearly ideal sort. But when we look more closely at this working force, and at this romancing about it which I have just indulged in, we shall find that we are thinking much more about the managerial segment of each member of the force than we are about his manual or mechanistic, non-managerial segment. Knowledge of the job, possible contribution to its progress, possible appreciation of the joint interests of the other groups —all these reside principally in the states of mind we might call managerial—and specifically among the group of workers whose jobs are principally managerial. If we focus attention upon those individuals whose work involves the understanding of the widest range of facts about the concern, whose possibilities of contribution are greatest, there comes into mind, I think, a picture of a sub-group of workers which, using the words in a very broad way, we might call the "managerial force," whose selfish interests, whose particular characteristics and qualifications all combine to make them by all odds the most hopeful instrument through which the chief management of a concern is to be chosen. So far among the groups directly involved, then, it is that sub-group which we can call the managerial force which best can hire management.

5. Joint Choices

There is a further possibility, which must be given a moment's attention, that is, the four possible combinations of joint choice — investors and workers, workers and customers, investors and customers, and all three together. All these combinations face a difficulty, insurmountable in my own mind, that a board directive, executive in its duties, would tend, if chosen by any of the four combinations, to become representative in its make-up and representative, moreover, of special interests partly at variance. If experience teaches any lesson clearly it is that while such representative, multipartisan bodies have their uses in preliminary surveys of any field, or as defenses against encroachments—as executives they are useful only by rare chance. To plan and to inspire accomplishment, a board must be unitary, free as possible from a narrow special interest, in sympathy and understanding with all the actuating motives of the essential groups.

The principal managerial job in any concern is the coordination, the composition, the integration of the impulses, energies, and interests of the three principal groups of human beings—the investors, the customers, the workers—keeping effective powers at a maximum, wasteful resistances at a minimum. The special interest of each group is a serious disqualifying factor for the job of coordinating three such special interests. Among the working force taken as a whole there are characteristics which tend somewhat to diminish this qualification. But if, for example, equal votes per capita should be thrown among them as in the political system, the choice of management undoubtedly would tend more strongly in the direction of the special interest than would in any way be desirable. But there exists, spread throughout the group, varying proportions of managerial activity—in itself, as we have seen, an understanding, coordinating activity. When we can find the way with the aid of John Williams' psychologists to measure the degree of this activity in each and to apportion accordingly an influence in choosing of management, we shall have an electorate of maximum qualification and minimum disqualification. Then if there is added to them by some scheme of proprietorship a share of the investors' interest, and by education or by some as yet uninvented scheme of more organic nature, a share of the consumers' interest as well, a very great advance in social fitness for the hiring of management will have been accomplished. Until that time the best approximation possible can be made by selecting out as wisely as may be the special sub-group of the working force in whose work the managerial element is of predominant magnitude, and placing among them the opportunity and responsibility for the election of the final governing body.

F. Who Can Choose the Choosers?

In a word, I believe, then, that only management can hire management. It is not merely that abstract reasoning points that way: experience hints strongly that efforts to get out from under the artificial system of investors' control will be persistent and ingenious. An inside group frequently forms itself and controls the control, focusing stockholders' votes by one means or another. Only for financial purposes, not for good operating, is a concern considered effective if fully controlled by absentee investors and run by hired men. But because of our ingrained custom of measuring success by the money that is *made,* as we say, some such are commonly thought of as successful merely when flotations have been successfully based upon them, though as operating organizations they may reek to heaven. For success in productive effort we all hanker after the old style of firm whose members had their time and their money tied up in its fate. And investors and others of the financial men, when trouble is in sight, seek for him who can get into the game all over, who will both manage and control, who will be management hired by management.

And the future, as well as past experience, holds hints of its own. The more entirely investorial a control becomes, the more wholly absentee it is, the more awkward becomes its task of hiring management. Is it not now becoming too awkward to hold its own in the hard fight of the next years? And, too, as the world's open spaces close up—forcing upon us not only stiffer competition but a firmer credit structure and easier capital—will not managerial ability of high enough order to win be the scarce commodity rather than capital and so win the control it can claim not only as its scarcity price but as its appropriate social engineering function as well?

IT IS my conviction that the humanizing of all the devices of industry, mechanical, financial and managerial, is going forward on a scale so large as to constitute the outstanding industrial advance of our times. A working-out of long-pent forces—I think permanently for the better—is going on under our eyes, and it is time we made ourselves aware of it.

To the remaining adherents of "strictly business principles" in business I have no doubt this new order looks radical enough. Many of those who are themselves responsible for the healthy advance now under way seem content with having progressed to the point where they now stand. In their view the progress has gone on as far as it can and will. I think it is going on. (A. Lincoln Filene, *A Merchant's Horizon*, pp. 208, 210.)

Coordination of Sales and Production[1]

How the Walworth Manufacturing Company Establishes Precise Sales-Production Schedules

By JOSEPH H. BARBER

Staff Assistant to the President, Walworth Manufacturing Co., Boston.

"IN INDUSTRY and commerce, all things are become new." The present day industrial administrator is becoming newly acquainted with the term "correlation," but the need which leads him to correlation studies is not new. He has long realized that his promise of success is assured only as he harnesses the industrial mechanisms and human energies within his control in tandem with the economic forces beyond his control. And now, through an increasing understanding of "correlations," he is stimulated to hope that the enticing theory of business cycles may be brought down to earth to serve his ends and to yield its share of influence in increasing profits to appease the clamoring stockholders.

Briefly this term "correlation" implies, first of all, that all activities — political, industrial or personal, and national, local or individual—pursue their respective courses in recurring sequences of ups and downs; and second, that their respective up and down fluctuations can be reasonably well measured and compared the one with the other. Further than this, the term implies that each administrator may discover that the rise and fall of his business as an individual economic unit may have a definite relation to the rise and fall of some other closely allied economic unit, or even to the rise and fall of the nation's industrial activity as a whole.

This possibility has been continuously denied by many writers who have considered their practical experience as proof. Recently there has appeared a popular discussion of the subject which definitely states "that there isn't a single business in the world to which the theory can be applied. Elaboration of that one statement might fill a book. The point is this: The cycle theory, which is founded on the idea that when one thing happens in business something else may be expected to happen, is applicable only to the total of business conditions in general."

Recalling the experience that we have had in our attempt to tie up the theoretical business cycle with our practical affairs, we find it difficult to agree with the final conclusion of the writer in spite of his clear argument in the case of some points of major consideration. The purpose of the present discussion is to present sufficient of what we have done in this connection so that you may understand the direction and scope of our activities and so that you may judge for yourself whether effort directed toward the solution of this knotty problem may be expected to return a profit to the investing enterprise. As an axiom, it may be stated that business cycle studies are not effective in the profitable sense unless they may be "brought down to earth" in a tangible way—unless they directly influence the quantities and time of initiating work orders into the shop in a suitable coordination with the quantity and time of sales orders to be received from the consumer.

As a part of a background of information, which one must have in order to comprehend our problem of production control against estimated sales, let us review the development of the company. This development had its first beginnings some six or seven years ago, and all the various adjustments and revisions of the company's previous activities had always in view the ultimate statistical control of a large, extended and complicated manufacturing and distributing corporation.

You will be interested, first, to know what we make. The product which we sell to our customers comprises some 23,000 items, all of which are listed in our catalogues and nearly all of which we intend to carry in stock ready for the customer's order. Of these 23,000 items, 17,000 items are manufactured in our producing plants. Of the 17,000 items a small group of only 600 items comprises, upon a tonnage basis, two-thirds of our full tonnage demand. The other 96 per cent of the 17,000 items comprise only one-third of our tonnage production and, as you would naturally assume, most of this third of the product is in slow moving items.

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[1] A paper presented at a meeting of the Taylor Society, April 25, at Cambridge, Mass.

You will be interested also in the plan of manufacturing and distribution. First—there are two manufacturing works of 50,000 tons per year combined capacity. One plant is located at South Boston, Mass., and the other, about double the area size of the South Boston plant, is located at Kewanee, Ill. Somewhat attached to each of these two works are two divisions. The divisions carry no stock. The Eastern Division, for instance, is somewhat in the position of a commission house, selling the goods of the Boston Works. Similarly the Western Division sells the goods of the Kewanee Works. The divisions, in large part, sell to jobbing concerns, which in turn sell to the retailer and consumer. The division does not sell only the product of the adjacent works, however. It sells to its jobber customers also some products direct from the other works, and some product of other than Walworth manufacture direct from allied outside vendors.

On the other hand, the divisions are not the only customers of the works. We have other selling units designated as branches. These are located in Boston, New York, Philadelphia, Cleveland, Youngstown, Chicago, Seattle, Portland, London and Glasgow. All of these branches carry a stock of Walworth goods, which they purchase direct from either works and also from outside vendors. They may sell to their customers (the retailer or the ultimate consumer) from their stock or they may have shipments made to their customers direct from either of our works or from an allied outside vendor. There is still one other form of selling unit, designated as the Walworth International Company, whose central location is at Bush Terminal, New York. This company is a commission house taking orders for Walworth product and for the product of certain allied manufacturers located within the United States. The International Company carries a stock of goods at Bush Terminal for immediate shipment on out-going vessels. However, a large bulk of its orders are accepted for large direct shipments from our works or from the works of the allied manufacturers. The International Company has a selling organization of its own, having branches in many cities throughout the world and sales agencies in many more. Thus the organization for manufacturing, purchasing and distributing the full catalogued line of 23,000 items of Walworth products is geographically world wide.

The accompanying diagram, Figure 1, shows the fundamentals governing the organization of the company in accordance with the accepted principles of functional control.

In addition to the designation of the usual officers of any corporation, there is always possible an initial functional classification of the two prime activities as "producing (or getting) the goods" and "selling the goods." Our organization chart lines up under a vice-president in charge of production the immediate control of buying of all raw materials and of producing the stock, and under a vice-president in charge of sales all "selling the goods" activities. Yet the complications of our large company make it advisable to relieve these two vice-presidents of certain phases of the work which can be adequately handled in a functional way by other executives. There are sufficient of these miscellaneous activities so that the responsibility for many of them is headed up under a vice-president in charge of administration. Moreover, because our business is somewhat technical, it is wise also to designate a vice-president in charge of engineering.

Finally, to aid in the coordination of all these activities, there is an advisory committee indicated as a staff to the president. The committee is comprised, however, of all the active officers, namely, the three vice-presidents and the treasurer, with the clerk of the corporation as its secretary, in addition to the president as its chairman. Such a body aims to bring together many-sided interests, experiences, and judgments for guiding the president's decisions in solution of the major problems of the business. It will be the ultimate purpose of this paper to show just how this "meeting of many minds" is directly utilized in our master planning control of sales and production.

The initial step leading up to the organization of the company in this manner had a very definite aim in view. It was to enable the company to take the next step, namely, to devise an accounting system which should hold each executive financially responsible for all the activities within his jurisdiction. The accounting arrangements, as they are now set up, make it possible for each production and sales unit executive to receive, promptly after the close of each month and covering his unit only, a profit and loss statement, a balance sheet, and a detailed expense analysis. Each subordinate executive receives a detailed expense analysis embodying the month's charges

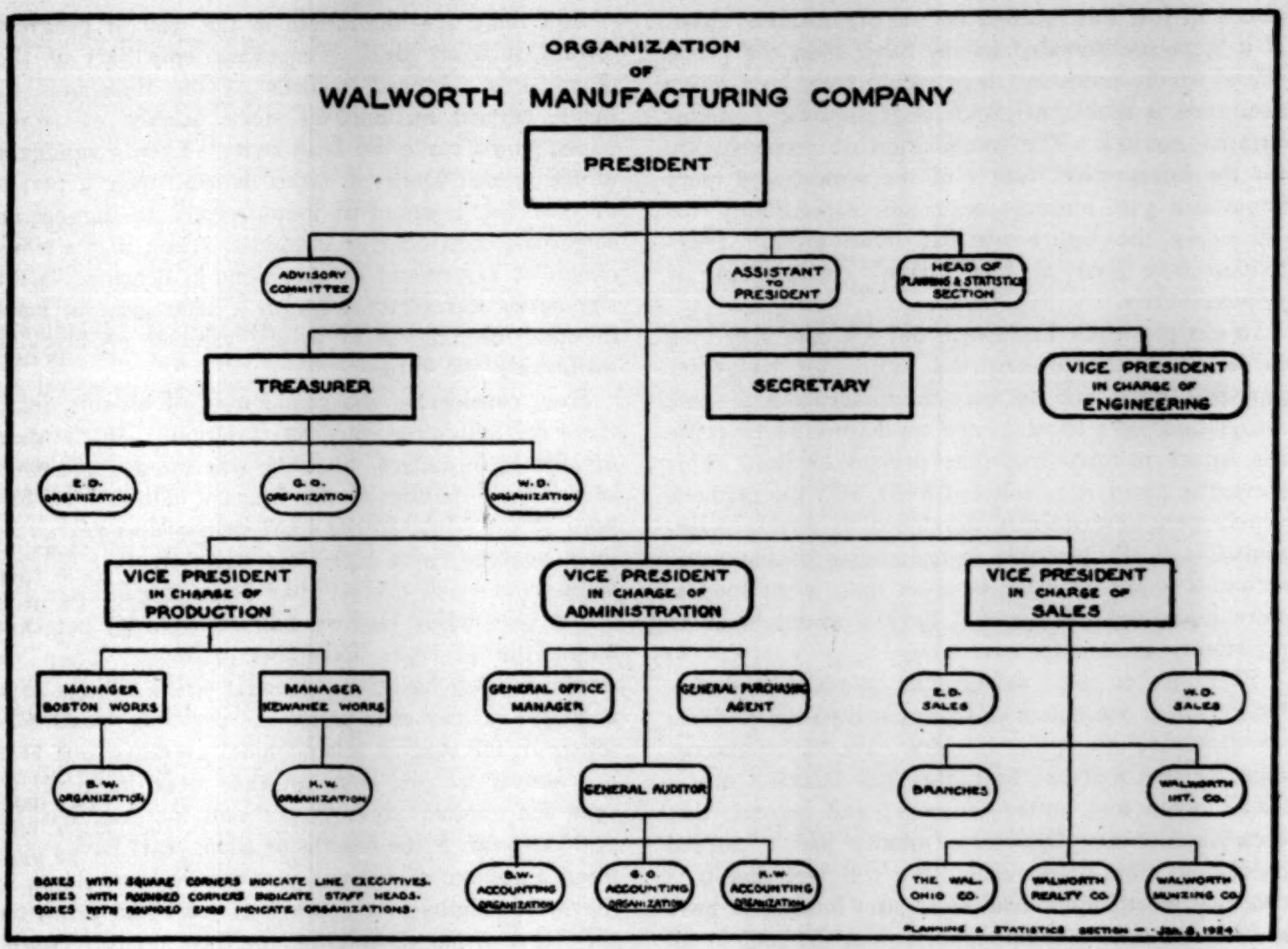

ORGANIZATION
OF
WALWORTH MANUFACTURING COMPANY
PRESIDENT
ADVISORY COMMITTEE
ASSISTANT TO PRESIDENT
HEAD OF PLANNING & STATISTICS SECTION
TREASURER
SECRETARY
VICE PRESIDENT IN CHARGE OF ENGINEERING
E. O. ORGANIZATION
G. O. ORGANIZATION
W. O. ORGANIZATION
VICE PRESIDENT IN CHARGE OF PRODUCTION
VICE PRESIDENT IN CHARGE OF ADMINISTRATION
VICE PRESIDENT IN CHARGE OF SALES
MANAGER BOSTON WORKS
MANAGER KEWANEE WORKS
GENERAL OFFICE MANAGER
GENERAL PURCHASING AGENT
E. O. SALES
W. O. SALES
B. W. ORGANIZATION
K. W. ORGANIZATION
GENERAL AUDITOR
BRANCHES
WALWORTH INT. CO.
B.W. ACCOUNTING ORGANIZATION
G. O. ACCOUNTING ORGANIZATION
K. W. ACCOUNTING ORGANIZATION
THE WAL. OHIO CO.
WALWORTH REALTY CO.
WALWORTH MUNZING CO.
BOXES WITH SQUARE CORNERS INDICATE LINE EXECUTIVES.
BOXES WITH ROUNDED CORNERS INDICATE STAFF HEADS.
BOXES WITH ROUNDED ENDS INDICATE ORGANIZATIONS.
PLANNING & STATISTICS SECTION — JAN. 8, 1924

Figure 1.

against him for all items of expense which the existence of his section incurs. This close coordination of accounting with the simple lines of organization we consider essential for the desired ultimate statistical control.

The next step in organization, then, was in a sense thought to be the culmination of all the earlier steps toward administrative control. This was the introduction, in 1920, of a planning and statistics section, in staff capacity attached to the president's office. At its inception, the planning and statistics section was intended to gather currently and continuously for the president and for the other major executives the pertinent facts of the business, much as the statistical section of any company serves its major officers. After much consultation a group of acceptable current statistical reports were designed with a view to their being concise yet adequate portrayals of the many phases of the current activities of the business. The several reports were statistical in nature, not precise accounting reports. All of them were intended to be issued in this statistical form within ten days after the close of the month, which would precede the audited reports by some fifteen or twenty days. Thus, in the earliest days of its existence, this staff statistical section confined itself to interpretive reports which should advise the executives in advance as to the major important information, later to be confirmed by auditors' reports.

The initiation of these current reports, however, was just a beginning, and as the need was felt for further advance information, a monthly financial budget was instituted and placed under the control of this established staff section. It is felt indeed fortunate that the responsibility for the outlook concerning the future and for budgetry control should have been placed in just this location on the organization chart. If it were subordinated to any other than the prime official of the company, there would have been lesser assurance, it is felt, of rapid progress toward administrative control. The combination of responsibility for the interpretive reports of the remote and more immediate past business with the responsibility for estimating the future of that same group of activities has been a very happy combination of responsibilities.

In our particular business it did not take very long to realize that estimating the future for budgetary purposes could not be very favorable unless some recognition were taken of the conditions which cause the future to vary from the present or past. This particular paper is to concern itself with the methods which were subsequently developed to enable determination of the probable future course of the many activities of the business, in order that, when budgets were calculated, they would have a sound basis of probability as to their execution.

There is yet some background material necessary before a real conception can be gained of the problem which we are attempting to solve. We had connected together two axioms: first, that our business was a staple bread and butter business; and second, that bread and butter businesses usually had a normal continuous flow of demand. We still feel that it is true that most staple bread and butter businesses have a fairly consistent, continuous normal demand in all years. We shared with others the feeling that the only reason orders did not come in, in such a continuous flow of demand, was that some accidental, unforseeable circumstances were constantly occurring to upset the normal flow, and that we simply had to make the best of a bad, erratic situation. To quote the words of our president in describing the development of business forecasting in general as well as our situation in particular: "Before the war the usual description of a capable executive was 'he has remarkable ability in meeting the situation,' the assumption being that such a man was bound to have, to a large extent, quick brain action, courage and great common sense. It will not be long before this definition will be obsolete. Already other characteristics are required of the successful manager. Among the first of these comes intelligent foresight. An executive's qualification today is measured by his ability to anticipate rather than to meet a situation."

Still there are hindrances in the way of progress toward such an ideal. To review only part of the detail order demand records of the thousands of items, carried on finished stock balance of stores cards, would make the head swim. Even a summary of the annual totals of order demand over a period of years for a group of items seemed to suggest no consistent individual or combined action in the time, extent or assortment of variations in demand. Most summaries seemed to be simply a heterogeneous mass of data, meaningless as to any valuable implications concerning the future.

Even considering the grand total of all this detail there are still some startling variations. In the case of billings in dollars, since the war the average drop of December billings to the January billings level has been 31 per cent. In the short span of five years this is an average of a high year when January billings were 10 per cent greater than December billings and a low year when January billings were 53 per cent under the previous December billings. Upon an annual average basis, one calendar year's billings have averaged 50 per cent under the previous year's billings. In the case of other annual averages, one year has shown 42 per cent increase over its previous year and another year, 35 per cent increase over its previous year. Some months of some years have registered a volume of billings just double the volume in the same months of the previous year, and yet, after the elapse of but six months, the then monthly figures would be registering volumes barely equal to the volumes of billings in the same months of the previous year.

These comparisons have all been of sales in terms of dollars. Ordinarily it might be presumed that dollar figures would vary more widely over a period of years than figures in physical units. The physical unit which we use when measuring totals of order demand is tonnage. It would then be presumed that order tonnage figures would show less violent variations than the billings figures, because there would not be the effect of changes in value of the dollar. This is not true, however, as comparisons will presently show, for the reason that in dealing with orders we are dealing with a factor which exhibits itself much more erratically than the smoother shipments or billings. Now, still thinking about total demand for our product, but in terms of the tonnage of orders, in two instances since the war it has been true that, within the span of only nine months, the first three months registered an order volume double the volume levels of the previous three months; the second three months of the period were stabilized at this 100 per cent increased level and the last three months of the nine months period registered a drop to one half the peak volume levels. Again, on two occasions since the war, the fourth quarter order volume has averaged but 40 per cent of, or 60 per cent under, the first quarter average in the same year, in spite of the fact that the fall has been considered the normal buying season in the trade.

It is evident that if there be such variations in totals and grand averages there would be almost inconceivable detail involved in analyzing the possible variations of any one of the 23,000 items. As an evolutionary development of our accounting control, it was early recognized that the human mind cannot conceive of such a wide assortment of product, and, for the purposes of cost accounting, a grouping of many items into one product class had been made upon a rational basis for the purpose intended. The classification distinguishes first between produced items and purchased, or resale items. Under one major division there is the conception of a subdivision of items of our manufacture into nine major product groups. It is easy for the mind to distinguish as a group all "tools," all "Kewanee specialties," all "grey iron fittings," etc. If certain general sales price, cost, or other ruling conditions were known concerning "grey iron fittings," the mind could readily catalog and retain recollection of these conditions, or "rules," and apply them to any one of the items within the affected group. As we are becoming more and more acquainted with the use of these major groups we find it possible to think separately of, and to distinguish individually, many of their subdivisions, or, in other words, to think of their minor product classes. That is, with reference to the subdivisions of all "tools," we can retain a memory of certain costs, selling prices and other facts or rules, with reference to each of the three most important subclassifications under the major product group, "01."

The tabulation below shows the grouping of items as subdivisions gradually leading up to the grand totals. Of course, this table is designed to indicate only the method of classification. The arrangement of classes and the number of designations shown are fictitious.

WALWORTH PRODUCT CLASSIFICATION

In Total: 13 Major Product Groups
Comprising 56 Minor Product Classes

Walworth Manufacture
(9 Major Groups)

01	Tools
011	Stillson Wrenches & parts
012	Die Plates, Taps, Dies and Reamers
013	The Walworth Chain (Bostong) Wrenches
014	Other Walworth Wrenches
015	Other Tools—Walworth Make
02	Kewanee Specialties
021	Nat'l Flanged Unions (only)
022	Kewanee Unions (only)
023	Kewanee Flanged Unions (only)
024	All other Kewanee Specialties
03	Grey Iron Products
31	Grey Iron Screwed Fittings
032	Grey Iron Flanged Fittings
033	Miscellaneous Grey Iron
etc.	

Other Manufacture
(4 Major Groups)

11	Iron & Steel Pipe
111	Blk. Steel Pipe T. & C. or P. E.
112	Galv. Steel Pipe T. & C. or P. E.
113	Blk. Gen. Wrt. Iron Pipe T. & C. or P. E.
114	Galv. Gen. Wrt. Iron Pipe T. & C. or P. E.
etc.	

Fortunately, this cost accounting grouping to aid the major executives has been found very acceptable for the purposes of statistical analysis. It has not yet proved possible to tie up any particular source of demand to any particular product class. In other words, any one source of demand may contribute to increase the demand of a large number of product classes. It is true, however, that the material within any one product class is thoroughly homogeneous, each item of the class reacting to essentially the same contributing demand factors, even though no one of these factors can be singled out against any one product class. Thus, it has been possible to develop many statistical control rules which can be applied logically to these individual product classes, as originally established; and these findings are being utilized, as will be shown later, in an inventory and production control, which can be conceived of and executed, to the extent of these detailed product classes, by the major executives of the company.

The first attempt to analyze these figures recognized that there must of necessity be definite contributing factors as causes of variation. Accordingly, the development of our statistical analysis of demand has been greatly aided by analyzing separately the causes which might underlie the wide variations shown by examples above.

The first of these causes we presume to be suggested by the term "seasonal variations." By this term we have in mind variations which would occur within any calendar year. For the moment forgetting such a thing as business cycles, much talked of lately, we can conceive of business as progressing—aside from accidental, erratic fluctuations—in a continuous, average straight-line flow. Presumably this average straight-line flow—that is, the direction of the demand volumes, if all the several variations from the average could be eliminated—would be gradually upward or horizontal; in some businesses it might be downward.

In any case, however, it is easy to conceive that within each calendar year there would be some variations certain to recur every year. Normally, if business did come in, in an average straight-line flow, year after year, one twelfth of the year's business would be done in each calendar month. Yet obviously all calendar months are not of the same length and not all months are subject to like weather conditions. Our business, for instance, being closely associated with the building industry, could not expect as much demand from the building trades in the winter months of the year as in the summer months. Therefore, within each calendar year, there would be variations to be counted upon, inasmuch as they are generated by causes recurringly effective at essentially the same time in every calendar year. If we could but study these seasonal variations and eliminate their effect from the raw demand figures, we should have a residue set of figures reflecting all other causes than seasonal.

Not so many years ago, economists theorized that the effects of a second definite cause should be very consistently evidenced in individual businesses. This second cause was the now much talked of business cycle, the argument being that every industry, in turn, to some extent at least felt the effect of the business cycles of general business the country over, each industry, therefore, pursuing a cycle of its own. If this business cycle for the individual company could be discovered and related to the business cycle of the country in general, there would be a considerable advantage to the administrator of the individual business, particularly in the wise revision of his major policies at the turning points of his cycle. However, it was realized that the business cycle action which might be revealed in the figures of any business, would very likely not be revealed unless the seasonal variations were first eliminated. The presence of the seasonal variations might so complicate the appearance of the raw demand figures that it would be difficult to see any direct connection between the general variations of the particular business and the business cycle of the country as a whole.

Thus we have summarized the evident need for an analysis of our own company's figures with a view to determining the causes of, in order to anticipate their effect upon, the variations in our own demand. It is evident that we could not expect financial estimates, as expressed in the budget, to approximate the actual conditions unless we could first anticipate accurately the incoming demand, could base thereon a definite purchasing and production schedule, and thereafter calculate resulting financial adjustments.

Our discussion now will proceed to outline some of the earlier statistical methods, first utilized concretely in establishing the 1923 sales quota. For clarity of thought, under this heading, we shall discuss only our sales in dollars. We shall now defer to a later section discussion of some of our later improved methods, of the problem of anticipating our real demand as expressed in order figures, and of our application of these demand findings in establishing inventory and production control.

Figure 2, then, presents the Walworth sales, or billings, index, based upon dollar values. The index is of simple construction by crude statistical methods from the raw figures. It will be recalled that the business cycle could not be revealed without eliminating the effect of seasonal variations. To eliminate the seasonal variations, we calculated the continuous one year's moving average of the monthly sales figures. This method roughly eliminates seasonal variations (and many purely erratic variations) because each average point results from the net effect of always twelve calendar months, and of an always maintained assortment of seasonally high months with seasonally low months to wash out seasonal differences.

These figures, when plotted on ordinary graph paper, revealed a constant recurrence of good times and bad times, each successive period or cycle recurring after a usual span of time. From such plottings, however, it was evident that there had been a long-time, continuous growth in business over a number

WALWORTH MANUFACTURING COMPANY SALES COMPARED WITH HARVARD CURVE B (BUSINESS)
1903–1914

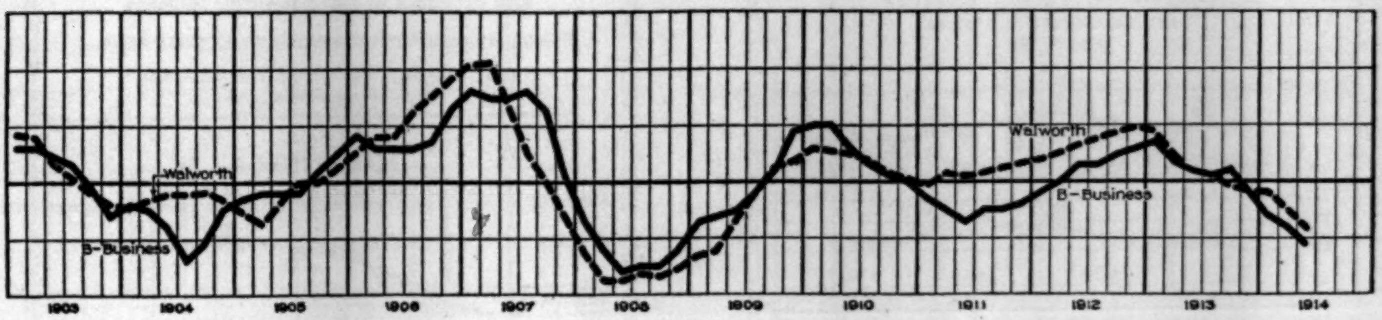


Figure 2.

of business cycles and that the true picture of the business cycles alone could not be discovered unless we eliminated this long time growth. Again by a crude statistical device, we effectively eliminated the long time growth. We calculated a moving average upon a sixty months—or five years—basis, this period being sufficiently lengthy to average out the variations caused by the business cycle. Calculation was made directly from the same series of new monthly sales figures as had been used for figuring the twelve month's moving average, with the anticipated effect of producing essentially a straight line. This straight line was then plotted on the graph sheet used for plotting the twelve month's moving average. (It was essential, of course, in plotting, to plot each average point at the center of the period averaged.) When this was done it was found that the one year's moving average consistently ran under and then over the five year's average line in about equal and offsetting areas.

The business cycle line, shown in Figure 2, is the one year's moving average figured in percentage of the five years' moving average level in the same centered month. On the chart shown, the various percentages are plotted as 10 per cent to one unit for comparison against the Harvard B line, the external business cycle index which most favorably compared then with our own business cycle index. This chart does not show an equally favorable post-war comparison and is not the chart which we use most at present. Nevertheless, it is presented here partially to show what may be accomplished with even crude statistical methods, requiring but little time for development, and partially to show the kind of analysis actually used with good results in taking recognition of business cycles when establishing our 1923 quota.

Much of the reasoning back of this quota establishment must be passed over, yet it will be of value to present a second chart, Figure 3, which is really the result of reasoning, following the compilation of the sales index. Because we were able to identify, from our own sales records and from our current economic studies, the particular type of business cycle year which would describe any calendar year, we were able to set up in a column above the year 1922, all the past sales years which had any reliable similarity to the year 1922. This chart simply shows, upon a more extended horizontal scale, the one year's moving average of our business cycle index and the actual monthly sales figures which are first below and then above the one year's moving average. By using ratio paper it was possible to make very direct analogy between the early years when our sales volumes ranged much less than our present volumes, and in the next chart, Figure 4, is shown a group of inferences concerning 1923, which might properly be drawn by analogy from Figure 3.

Again much of the intermediate reasoning must be omitted. Sufficient to say that pros and cons were mathematically tabulated for each of the three assumptions shown, with the final decision that we were thoroughly safe in committing ourselves in production and expense to the middle assumption, representing a 12½ per cent increase over 1922. On the other hand, certain mathematical considerations argued for the largest of the assumptions, which was supported also by sales department considerations much more significant than mathematical considerations, (for the department had at hand the estimates of the local sales managers who are to be honored for their optimism where optimism is most desirable). It was

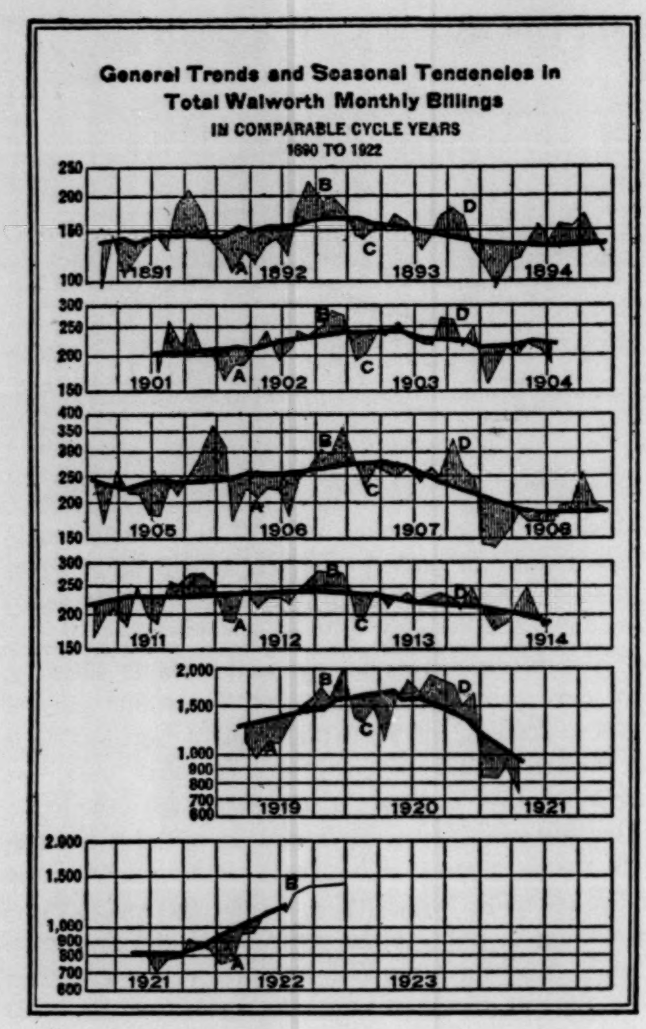


Figure 3.

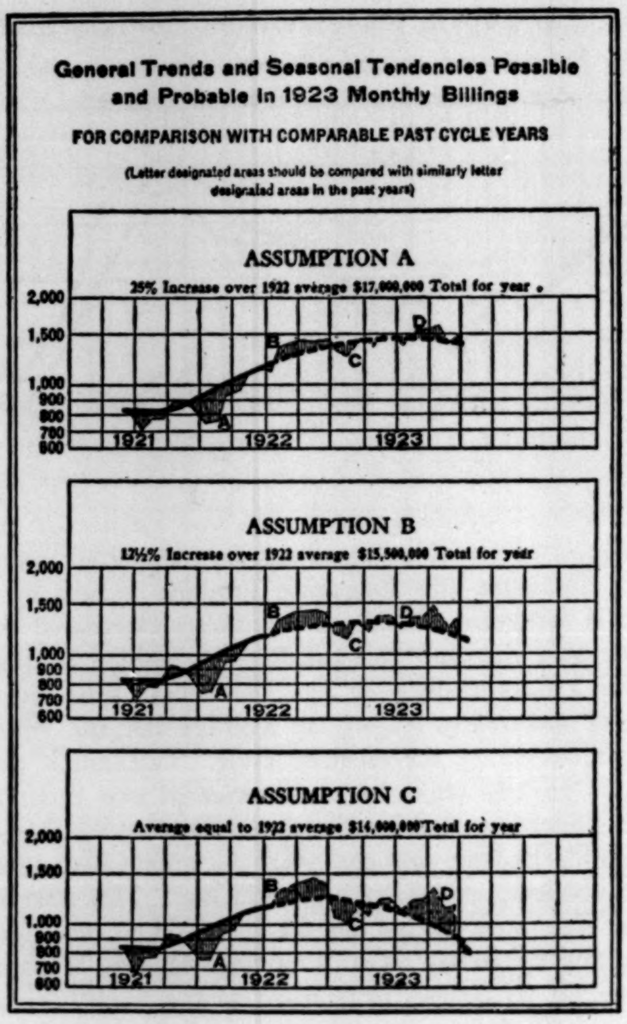


Figure 4.

not thought desirable, nor necessary, to harmonize the purely statistical assumption B with the assumption A supported by the sales department's analysis of possibilities.

By utilizing suitable break-down ratios—tempered by other considerations, each of these two larger assumptions was broken down to individual monthly amounts for each unit. To add zest to the quota, the lower figure, that is, 12½ per cent increase over 1922, was called the "dead line," because it was the amount that the company was immediately going to commit itself to, and, therefore, the amount which the sales organization *must* develop as a real demand. The larger figure was called the quota. It was the amount which the vice-president in charge of sales felt each unit really had the opportunity to attain. Of course, the margin between the dead line and quota was not for all sales units a like percentage over the unit's dead line. It was realized that in some territories, more than in others, there existed opportunity for a large dead line increase over 1922 levels, and also that certain units had greater opportunities than others with reference to attaining a quota far above their dead line. All these differences were mathematically adjusted and the final monthly sales dead line and quota figures for each unit took recognition of these differences. Figure 5 pictures the general plan as it was presented to the salesmen; many of the local managers broke their local unit dead line and quota amounts down to dead line and quota amounts for each salesman.

Coincident with the establishment of the annual sales program, the meaning of the dollar figures was calculated in terms of tonnage requirements upon the producing unit, and facilities were checked up against the requirements. Since this paper is pri-

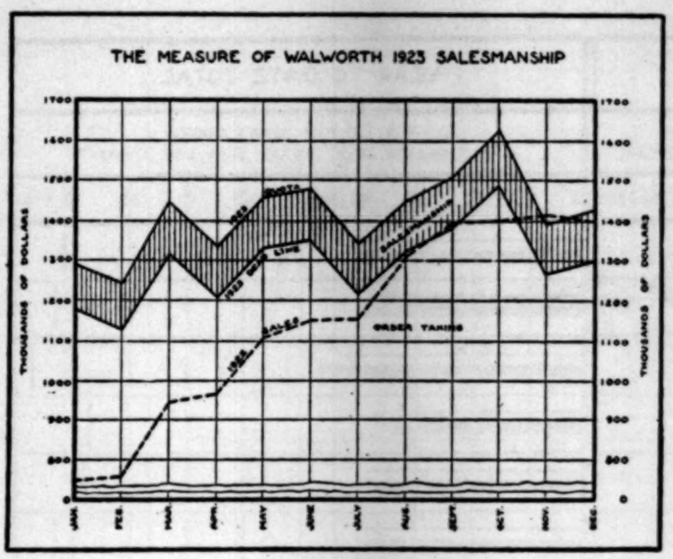


Figure 5.

marily concerned with the current and continuous forecasting and the consequent adjustment of inventory and production, we shall pass over at once the many interesting by-products of such an annual forecast. Before leaving the subject of the sales quota, however, it will be interesting to note that the local units were considerably stimulated month by month, through the publication in the sales department house organ of the monthly sales performance chart. This monthly sales chart was followed with great interest throughout the year and its form is exhibited in Figure 6, fictitiously posted as if for the month of May. This general style of quota and its form of presentation is unchanged in 1924. The upper hollow bar is the year-to-date quota; the short vertical line toward the right of the hollow bar represents the location of the year-to-date dead line. The lower bar of the pair, that is, the black bar, represents the per cent of year's quota actually attained for the year-to-date.

We shall now dismiss further consideration of these earlier statistical methods, carried out with a staff force of three persons, which largely emphasized the analysis of billings in dollars, in order to consider the more advanced steps taken during 1923 to improve the statistical methods and to analize more definitely the real demand as we find it expressed in orders received, in terms of tonnage, devoid of price considerations. The sales figures which we have been discussing comprised the demand as expressed by *shipments* from all our various distributing units, but to our customers only, that is, excluding all intercompany shipments. Now we are to switch our thought, not only to tons, as contrasted with dollars, but more specifically to the tonnage demand as it falls immediately upon the works only—the producing units—regardless of source of demand—whether from our ultimate customers, who buy direct, or from our own distributing units as customers, buying from the works for their own stock.

In our discussion of works orders, we shall briefly accept the fact that we have used improved statistical analysis, closely parallelling the style of analysis followed by the Harvard Bureau of Economic Research. The chart form of Figure 7, with its explanatory matter, indicates an arrangement which has been adopted as standard for the portrayal of the analysis of customers' sales for each selling unit, of the analysis of total orders for the combined and for each individual works, of the detailed analysis of orders for each of the several major product groups, and so forth. Here the chart form is used to picture the combined works' orders, and the record shown is as of about January 10, 1924. It is observed that the upper section of Figure 7 depicts the raw figures. While these figures indicate a very evident business cycle action, there is a certain indefiniteness to the cycle swing of the curve. In the second section of the chart there is inserted, in the column covering each calendar year, the same seasonal variation curve. This seasonal curve shown against each succeeding calendar year is the average seasonal curve based on the five year post-war experience. In the third section of the chart, this automatically calculated seasonal influence has been eliminated from the raw figures of the upper chart, and the residue figures, month by month, are shown in standard units of deviation. The deviation is calculated from an assumed normal. In the particular chart shown, the normal had been arbitrarily selected as the average of 1919-1922.

At this point it may be stated that this same chart style has been used in the analysis of some groups for which there is a "long-time growth" increase of appreciable magnitude even in such a short period. From the raw figures for any one of such groups, the straight line of long-time growth has been calculated by an accepted automatic statistical formula and the deviations (of the seasonally corrected figures) have been measured in standard units above or below the calculated slope of the normal growth line. Even in such cases, in the third section of the chart,

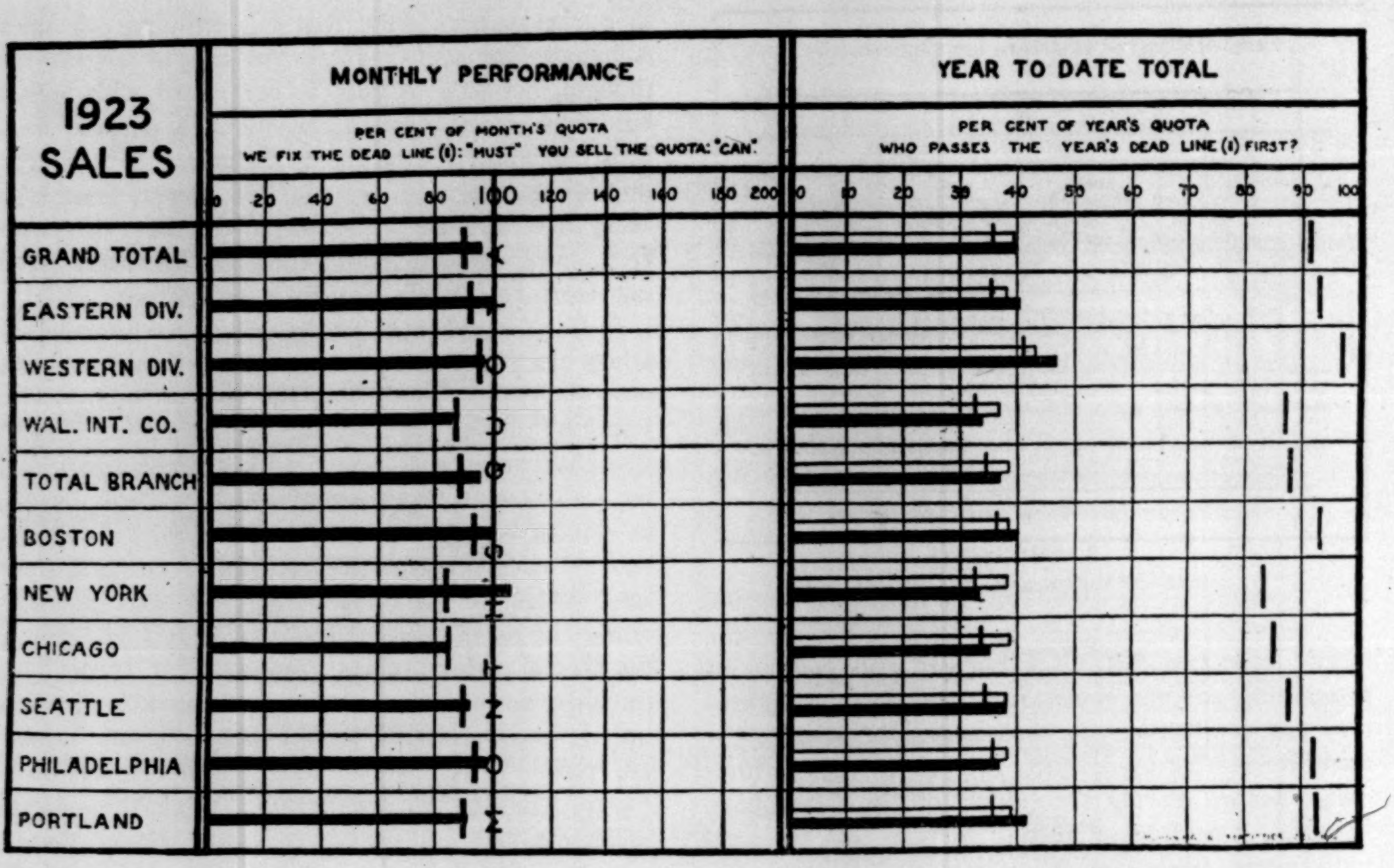
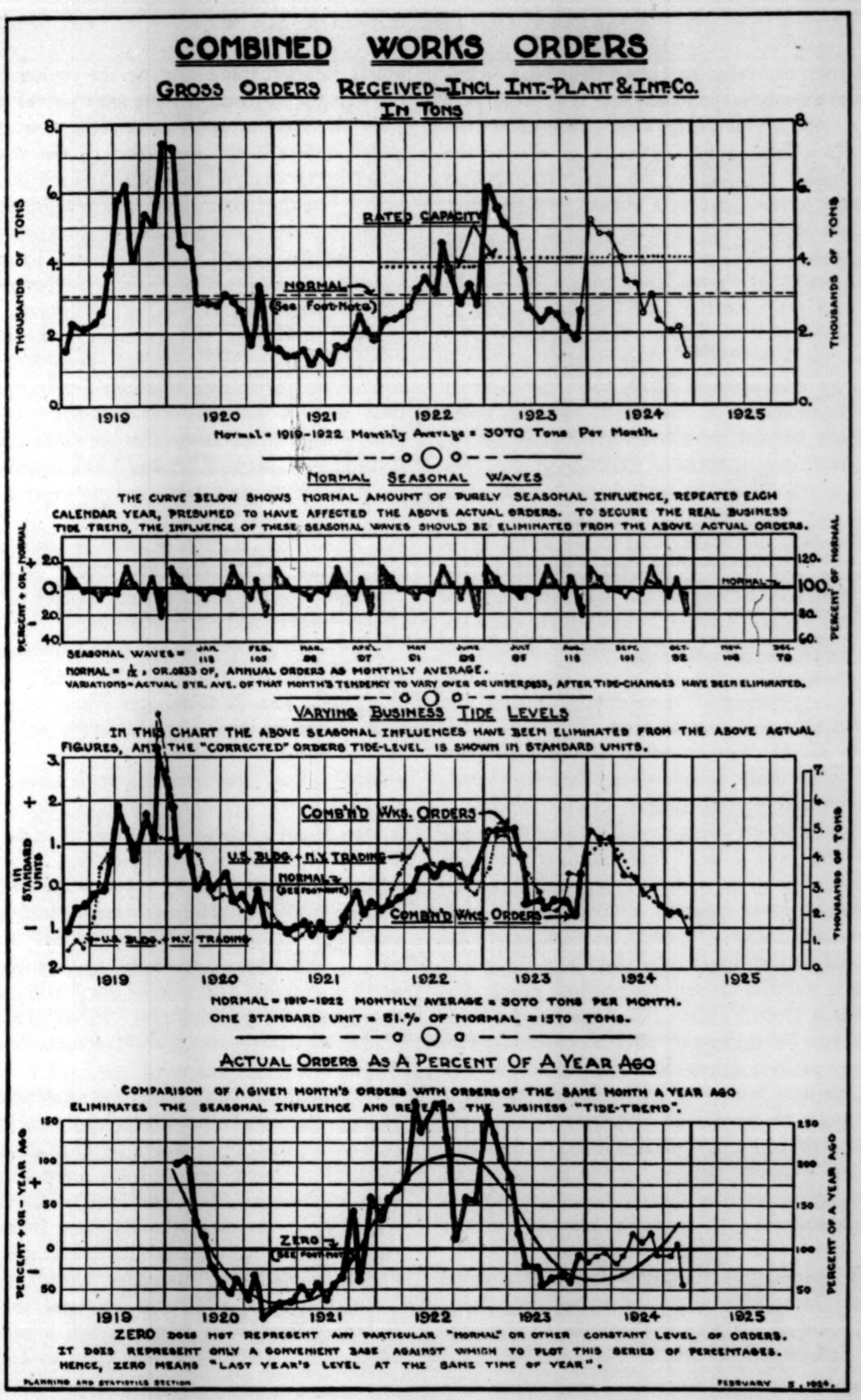


Figure 6.

the normal growth line is assumed to be horizontal and the plus and minus units are shown above and below this normal line.

But now to return to discussion of the third section of Figure 7, the advantage of using standard units is to enable direct comparison of our order cycle curve with external barometer cycle curves, which are customarily shown in standard units. As a general analysis policy, considerable attention is given to the selection of the combination of external barometers for each particular unit's or group's cycle curve, which will give the best comparison with that curve. Thus, for this cycle curve in the third section of Figure 7 covering combined works orders, we have shown an external barometer composed of an average of New York bank debits and of United States building in square feet (Dodge figures for twenty-seven states). Each external index has been adjusted, of course, to eliminate its own seasonal variations, and these indices have been averaged in standard units for true comparison of only the business cycle fluctuations.

It is observed at once that, ever since the close of the war, in all the general and even in many of the intermediate cycle movements, our monthly order line has either exactly correlated with the external barometer, or else it has for one or two months run below it, only to be followed by a period of one or two months running above it. A possible exception to be noted is in early 1922 when our order line did not rise as rapidly as the external index. Possibly the reason is this: at that time building was predominatingly of the residential type. The full expansion of building would be reflected in the external index, although the bulk of building—that is, the residental—would contribute but a disproportionably small stimulus to increased demand for our product. Another possible exception to a good correspondence of the curves occurs in early 1923. Then for four months, our cycle index was at abnormally high levels; in only two of these months did the external barometer approach our high levels. Possibly our index indicates that we secured early in the year orders which normally would have been received later in the year. This probability seems confirmed by the fact that buyers, having overanticipated their needs



COMBINED WORKS ORDERS

GROSS ORDERS RECEIVED–INCL. INT.-PLANT & INT. CO. IN TONS

Normal = 1919-1922 Monthly Average = 3070 Tons Per Month.

NORMAL SEASONAL WAVES

THE CURVE BELOW SHOWS NORMAL AMOUNT OF PURELY SEASONAL INFLUENCE, REPEATED EACH CALENDAR YEAR, PRESUMED TO HAVE AFFECTED THE ABOVE ACTUAL ORDERS. TO SECURE THE REAL BUSINESS TIDE TREND, THE INFLUENCE OF THESE SEASONAL WAVES SHOULD BE ELIMINATED FROM THE ABOVE ACTUAL ORDERS.

SEASONAL WAVES =	JAN.	FEB.	MAR.	APR'L.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
	113	105	96	97	91	96	95	116	101	92	108	79

NORMAL = $\frac{1}{12}$, OR .0833 OF, ANNUAL ORDERS AS MONTHLY AVERAGE.

VARIATIONS = ACTUAL 5YR. AVE. OF THAT MONTH'S TENDENCY TO VARY OVER OR UNDER 0833, AFTER TIDE-CHANGES HAVE BEEN ELIMINATED.

VARYING BUSINESS TIDE LEVELS

IN THIS CHART THE ABOVE SEASONAL INFLUENCES HAVE BEEN ELIMINATED FROM THE ABOVE ACTUAL FIGURES, AND THE "CORRECTED" ORDERS TIDE-LEVEL IS SHOWN IN STANDARD UNITS.

NORMAL = 1919-1922 MONTHLY AVERAGE = 3070 TONS PER MONTH.
ONE STANDARD UNIT = 51.% OF NORMAL = 1570 TONS.

ACTUAL ORDERS AS A PERCENT OF A YEAR AGO

COMPARISON OF A GIVEN MONTH'S ORDERS WITH ORDERS OF THE SAME MONTH A YEAR AGO ELIMINATES THE SEASONAL INFLUENCE AND REVEALS THE BUSINESS "TIDE-TREND".

ZERO DOES NOT REPRESENT ANY PARTICULAR "NORMAL" OR OTHER CONSTANT LEVEL OF ORDERS. IT DOES REPRESENT ONLY A CONVENIENT BASE AGAINST WHICH TO PLOT THIS SERIES OF PERCENTAGES. HENCE, ZERO MEANS "LAST YEAR'S LEVEL AT THE SAME TIME OF YEAR".

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Figure 7.

early in the year, naturally contracted their later ordering to such an extent that our cycle line fell almost vertically after April, stabilizing after June at below-normal levels. Taking the year as a whole, the amount by which we overran the external index in the early part of the year was almost wholly offset by the amount of underrun later in the year.

Further than this, all sections of Figure 7 depict the curves projected throughout 1924. The projections shown are upon the dead line basis—that is, upon the basis of order volumes which can be counted upon from the sales units. The projections were determined by our opinion as to how the external index would probably run throughout 1924, an opinion which was formed, of course, after considerable economic investigation. As a check upon the reasonableness of the foregoing analysis and of the 1924 projections the lower section of Figure 7 gives another convenient index designed to reveal the cycle action. While this index is not quite so reliable as the index in standard units, at the same time it does have a certain check-up value. Thus, if the estimate looks reasonable against all the possible means of checking it against past performances, there is a fair degree of probability that it will approximate the actual, which time will develop later.

By charts of this type prepared for each product group and by similarly specific data concerning product classes with reference to their product group, it is possible to build up one year in advance for each quarter of the year a dead line estimate for each product class of importance. To suggest how essential it is that we give separate consideration to each class of product, not only as to its peculiar individual characteristics, but also as to its relation to the grand total, there is introduced here the product group seasonal tendency chart, Figure 8. This chart brings together in one place the varying seasonal tendencies of the major product group covering product of our own manufacture. It may be interesting to state here that in general, so far as the business cycle is concerned, the product groups all rise and fall together, but when the business cycle variations are combined with these varying seasonal fluctuations, there is often very little appearance of similarity between product groups.

Now, of course, this annual program determined for the year in advance must be revised as current reports are posted. If the first months of the year show that orders are running 10 per cent under the initial forecast there may be the option of considering that we may still get the same actual annual total. This would probably mean that the shortage of anticipated orders in the early part of the year would be offset by an overrun of orders toward the end of the year. On the other hand, analysis of other factors might indicate that the 10 per cent overrun in the first months should really indicate to us that our annual estimate as a whole was 10 per cent optimistic. In any case, as the year progresses, there is a constant check-up and revision according to later developments. Sufficient has been shown in this connection to indicate that the application of statistical analysis develops the possibility of estimating orders well in advance—that is, sufficiently early to determine a mature production and inventory program while there is yet time to control the factors governing production and inventory. Before closing our discussion, it will be well to suggest how the significance of the projected order estimate can be "brought down to earth" and applied to the control of inventories and of production.

Figure 9 shows the Portland Branch inventory chart, posted as it would have been about January 25, 1924. The Portland warehouse had a considerable inventory when the old owner sold the interest to our company. During 1921 the inventory line showed some liquidation of inventories in spite of a very low rate of sales. However, at the end of 1921 it was found advisable to write off in an adjustment a certain portion of that inventory. Even with this adjustment the inventory entered 1922 with what we consider to be an undesirably large number of months' sales tied up in stock. This situation was improved during 1922, not so much by an inventory reduction as by increasing the rate of sales without a proportional increase in inventory. Hence the shaded area above the three months' inventory line gradually diminished.

In September, 1922, there was established the policy of setting up in advance inventory marks to be attained before a prescribed date. At that time, inventory marks for December 31, 1922, were established for each of the branches. The level of inventory represented by the mark of the Portland Branch is shown on the chart by a cross, the cross applying to the upper of the two inventory lines. October and November show a definite response to the desired inventory liquidation program, but it became evident before the close of the year that, in anticipation of

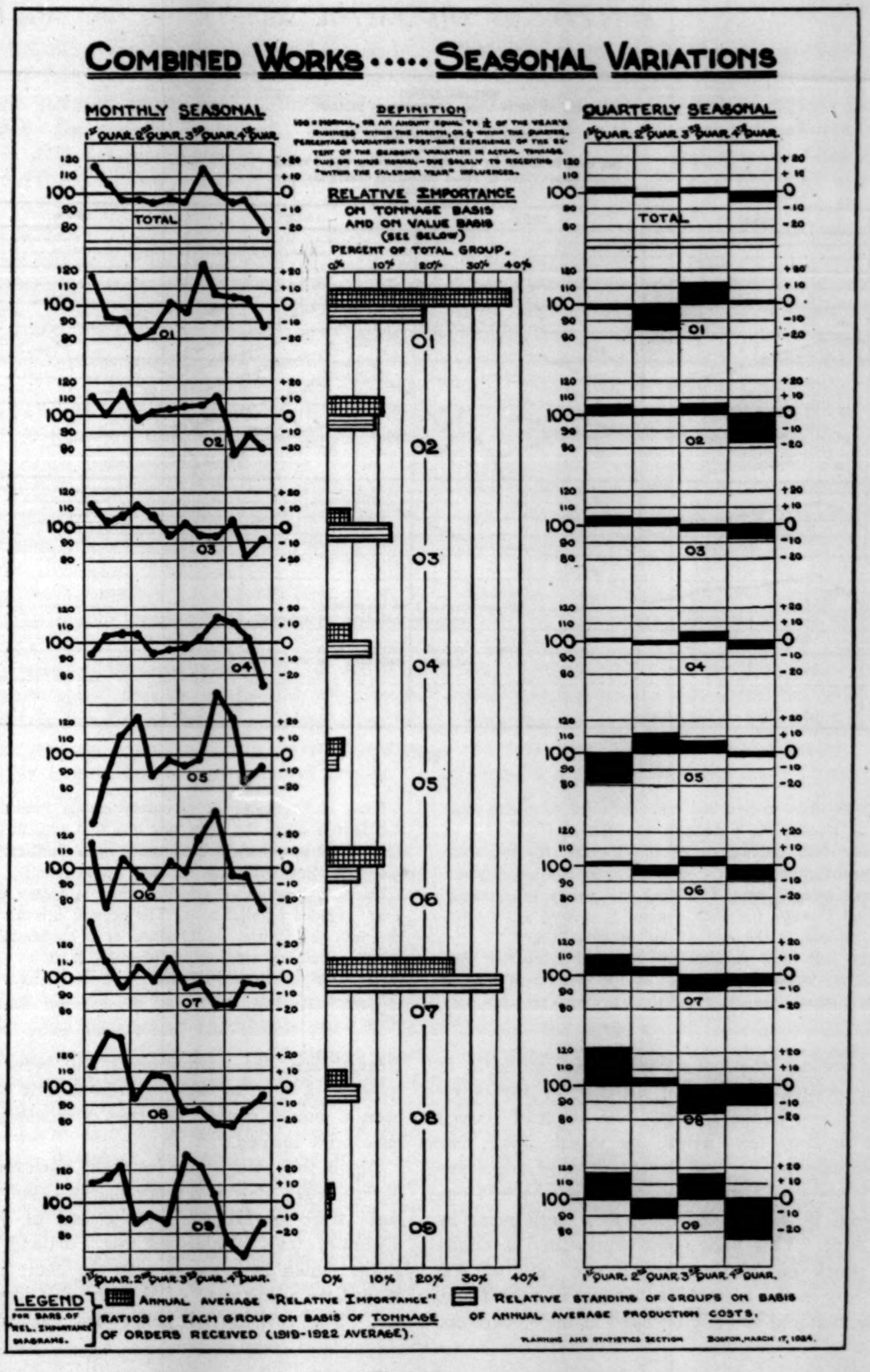

COMBINED WORKS ..... SEASONAL VARIATIONS
MONTHLY SEASONAL
DEFINITION
100 = NORMAL, OR AN AMOUNT EQUAL TO 1/12 OF THE YEAR'S BUSINESS WITHIN THE MONTH, OR 1/4 WITHIN THE QUARTER. PERCENTAGE VARIATION = POST-WAR EXPERIENCE OF THE EXTENT OF THE SEASON'S VARIATION IN ACTUAL TONNAGE PLUS OR MINUS NORMAL - DUE SOLELY TO RECURRING "WITHIN THE CALENDAR YEAR" INFLUENCES.
QUARTERLY SEASONAL
1ST QUAR. 2ND QUAR. 3RD QUAR. 4TH QUAR.
RELATIVE IMPORTANCE
ON TONNAGE BASIS
AND ON VALUE BASIS
(SEE BELOW)
PERCENT OF TOTAL GROUP.
0% 10% 20% 30% 40%
120
110
100
90
80
+20
+10
0
-10
-20
TOTAL
01
02
03
04
05
06
07
08
09
LEGEND FOR BARS OF REL. IMPORTANCE DIAGRAMS.
▦ ANNUAL AVERAGE "RELATIVE IMPORTANCE" RATIOS OF EACH GROUP ON BASIS OF TONNAGE OF ORDERS RECEIVED (1919-1922 AVERAGE).
☰ RELATIVE STANDING OF GROUPS ON BASIS OF ANNUAL AVERAGE PRODUCTION COSTS.
PLANNING AND STATISTICS SECTION
BOSTON, MARCH 17, 1924.

Figure 8.

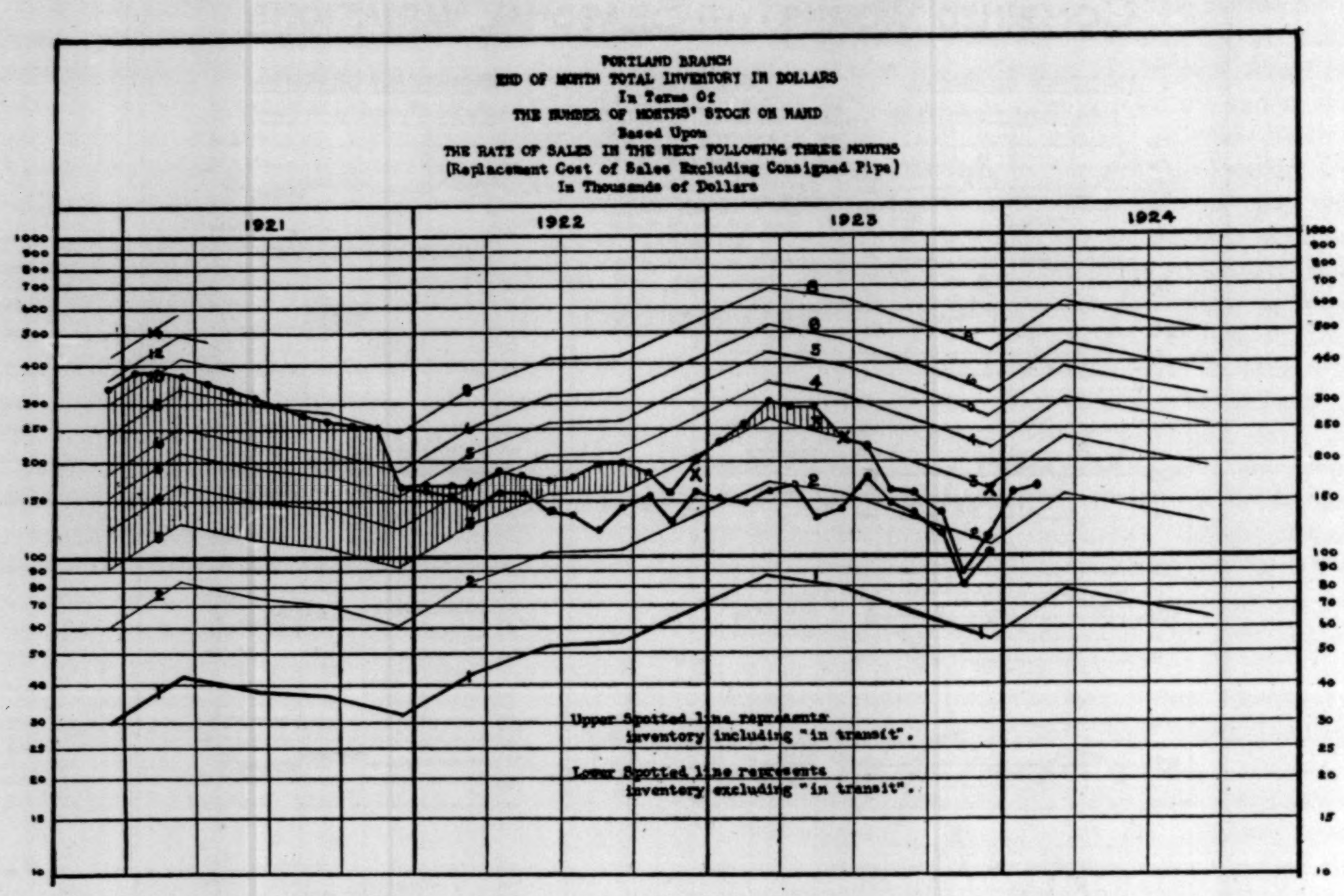


Figure 9.

Explanation—The spotted line represents end of month total inventory as reported in thousands of dollars.

The heavy full line represents the average monthly rate of replacement cost of stock sales (except consigned pipe) in the three months next following the points of plotting.

The actual average for each quarter is plotted against the inventory amount at the end of the previous quarter.

The light full lines parallel the monthly sales rate line to indicate the levels at any point on the chart representing 2, 3, 4, etc., months' sales at the then average monthly rate line.

Thus, if December 31 inventory equals January, February and March sales, the inventory line will fall on guide line 3. And, if the inventory is maintained on a similar three months basis, the line will stay on that guide line.

The future estimated sales line may be drawn and the guide lines extended parallel to it. The present inventory level, carried into the future, would show as a horizontal line to the sales, is read from the extended guide lines.
right. The significance of that level, in terms of the future

Crosses indicate marks set in advance by the general office.

improved spring business according to forecasts, it would be desirable to permit increase of inventory to higher levels in the spring. The financial budget operated to keep tabs month by month upon this permitted increase in total inventory, and from the chart is is observed that inventory was expanded from a low point in November, 1922, to a high point in March, 1923. This high point represented a doubling of stock on hand, although the bulk of the increase was in the margin of material in transit and not in the material actually on hand in the stockroom. Nevertheless, the commitments had been doubled in so short a time as four months and it would have been a simple matter for free purchasing habits to have been formed.

Again the policy was invoked, however, when in March, 1923, new inventory marks based upon forecasts were established for the end of June. The inventory level established for Portland Branch is again shown by a cross, and the chart records the immediate adjustment of the branch's inventory policy. The revision of policy was made sufficiently early and definitely so that the inventory mark was reached on June 30. The chart indicates that this liquidation virtually meant only a limitation upon commitments for material in transit. The material actually in stock (as represented by the lower of the two spotted lines) was not yet decreased. This actual in-stock inventory was at good levels until July, insuring good service over the counter at that branch, as long as the second quarter sales (represented by the March location plotting on the chart) remained at peak levels. The real decline in the in-stock inventory did not begin until after the peak of orders had passed.

By the end of June, 1923, the peak of sales had been passed and there had been sufficient confirmation of the general forecast of a decline in sales so that, in July, there were established with confidence inventory marks to be reached at the end of December. As always, the inventory marks considered the burdens which were placed upon inventory in view of the anticipated rate of sales in the following quarter. Thus the inventory mark set for December, 1923, represented three months' sales on the basis of the estimate sales for the first quarter of 1924. At a glance the chart indicates that rapid strides were made in the direction of the inventory mark, first by eliminating the margin of material in transit and later by an actual reduction in the material on hand. This latter reduction was possible largely because of seasonal decline in the rate of orders.

To the right, the guide line projections into the 1924 section of the chart are based upon the 1924 quarterly forecast for the purchase cost of sales out of Portland branch stock. The January and February projections of the total inventory line indicate the inventory policy recorded by the Portland branch manager by means of his monthly budget estimate. Each month we receive similar budget estimate figures from other units; and the simple charting of contemplated inventory increases or decreases upon the various branch charts gives a vivid picture of continued or changing inventory policies.

Charts of a similar nature are maintained for each product class inventory, but upon a tonnage rather than upon a value basis. As in the case of the branch inventory charts, so also in the case of the works product class inventory charts, the exceptional theory has been carried out, in that the executive, reviewing a complete series of charts, needs to watch only for those of specific cases where areas are developing. Of course, in the case of works inventory control, the situation is a little more complex, involving considerations of unfilled orders carried over from month to month to be added to the current rate of incoming orders and questions concerning raw material purchases, the extent of work in process and the rate of liquidation of inventories through shipment; but the principle of analysis and control does not differ greatly.

From much of the discussion so far, it might seem that complete dependence has been placed upon statistical analysis alone. This would indeed be an incorrect inference. Statistics at best are but a handy tool. They may become a dangerous tool, even to the point where the user of statistics will be misguided, unless he combines judgment with the statistical inferences. Statistics serve to aid the mind in its reasonings up to a certain point. Beyond that point experience and judgment must take the final jump to a decision.

It will be interesting to see how statistics, in just this sense, are proving of value to our major executives in their determination of the inventory and production programs for a coming quarter of the year. Figure 10 shows the tabulation of pertinent data which must be considered in order to determine for the second quarter of 1924 its production and inventory program for the product class 014. There is a similar sheet for each product class for which it is advisable to establish a program in advance.

This type of quarterly estimate, prior to each quarter of the year, is in effect a revision of the original annual estimate. The revision will be made in the light of present knowledge and experience, just as the need is arising for a sound basis for entering into the shops work orders for what will become the next quarter's finished production. Now, at the time of considering the program for the second quarter, the latest actual information at hand is the information for the closing month of 1923. In other words, in order for the producing units to receive their information sufficiently early to enable adjustment of their raw material purchases and work in process (so that they may effect inventory increase or decrease in the second quarter), the authorization must be granted to the vice-president in charge of production not later than the first of February. At that time, not even total January orders will have been reported. Hence, it is necessary, not only to estimate all the factors operating to affect inventory during this second quarter, but also to estimate the net effect of all factors operating to affect inventory during the first quarter of the year.

The factors affecting finished stock inventory (which in turn controls work in process inventory) are the production which would increase inventory and the shipments which would decrease it. But the probable rate of shipments is in turn affected by the probable rate of orders and by the volume of unfilled orders carried over from a previous period. Moreover, the probable rate of production, more properly defined as the desirable rate of production, will involve the question of its own uniformity consistent with the minimum desirable volume of unfilled orders at any time.

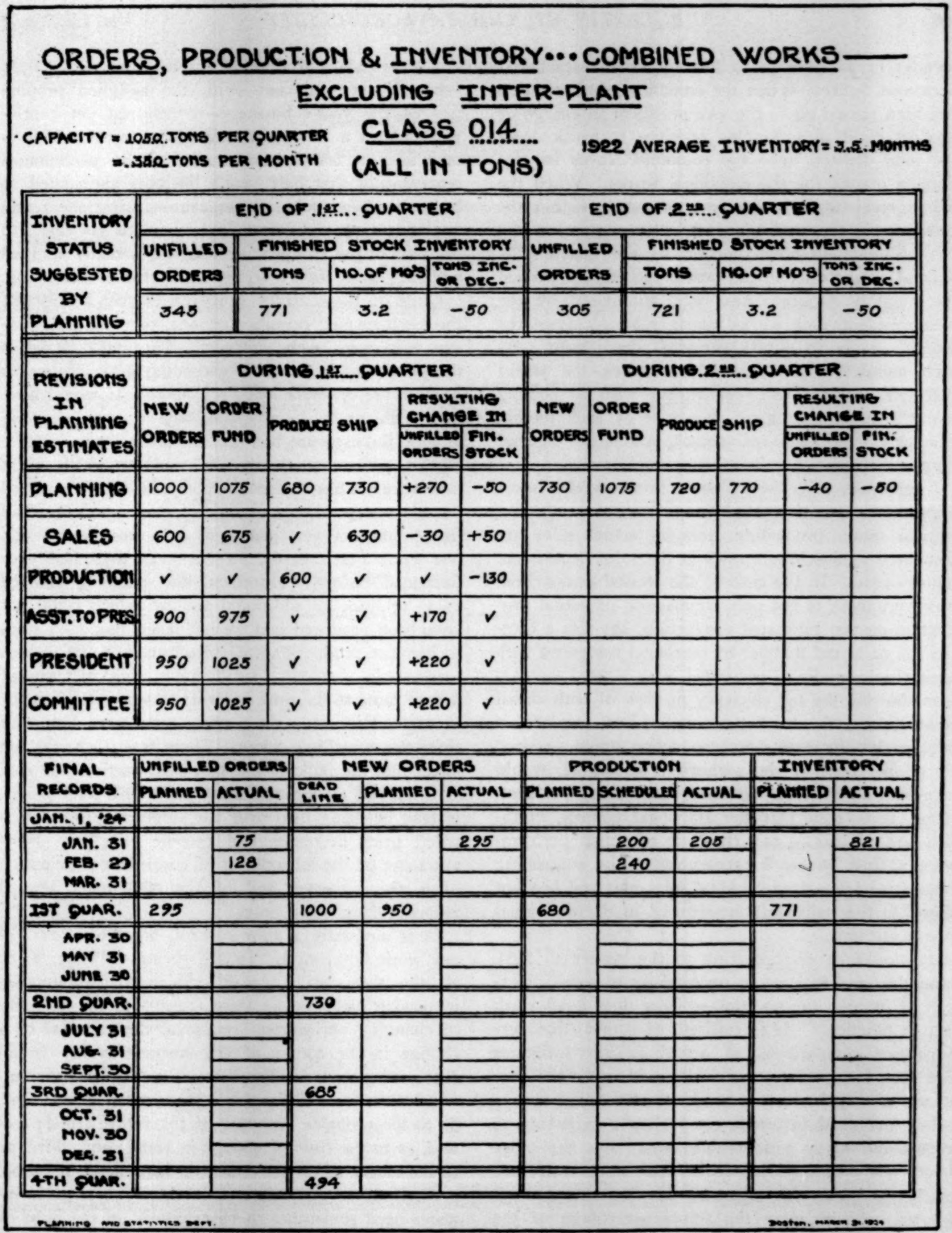
Thus it is the purpose of the Figure 10 tabulation to provide for executive consideration of these factors, as they affect, for instance, product class 014. The form is filled in with fictitious figures as it would be completed by the planning and statistics section just prior to February 1, for the second quarter consideration. In the upper section is a notation of the probable volume of unfilled orders and of probable inventory at the end of the current and of the coming quarters. The figures in the upper section record the net effect of the planning section's estimates to which they commit themselves upon the first line of the next lower section of the form. Their figures shown in the first quarter spaces will be revisions, if any, of their original first quarter estimates made three months earlier. Their estimates entered in the second quarter spaces will record for the first time their anticipations based upon experience records and opinion as to economic trends. The balance of the figures under the "first quarter" in this section of the table will be copied over from the similar estimate sheet compiled three months earlier. In other words, provision is made for revision by all the estimators of their earlier quarter's estimates, as they determine their estimates for the succeeding quarter. At the foot of the sheet is relevant supplementary information, posted as far as possible to date, with estimated January totals.

Thus, with a statistical background and their own earlier estimates at hand, the sheet is ready to go to each estimator's office for definite revision of the earlier estimate, coincident with the initial decision as to the coming quarter's probabilities and desirabilities. At this point photostats are taken from the original for this class (and from all the others also to be estimated), one for each of the estimators. In the next few days each of these executives revises, if he chooses, his original estimates and inserts his initial estimate for the second quarter. Figures are inserted only in case of disagreement with the planning section's estimates, checkmarks indicating agreement. After filling in all his sheets, he returns them to the planning section for posting the master sheet for each class.

Now we have crystalized into estimates inserted upon the sheet many and varying possibilities as to the probable or desirable course of future activity. The sales department, for its revised or initial estimates, has as a background a constant touch with the general status of trade feeling; is possibly acquainted with a developing optimism which would not yet be recorded in any statistical figures; and has the more specific estimates of sales units. Similarly, each other estimator is in touch with developments of some of the variable factors, and because of the several experiences, differing contacts and personal inclinations, each will definitely reflect in his estimates many vital considerations which statistics alone could not reveal.

With all these estimates upon the several class sheets, photostats are again taken and issued to the various estimators and the many other members of the advisory committee, so that they all may observe wherein the estimates differ from one another. Possibly prior to committee meeting there may be discussion between executives having differences of opinion. In any case, the full set of sheets is reviewed by appointment in committee meeting about two months prior to the beginning of the second quarter. In view of the fact that the committee includes most of the executives responsible for the estimates, that each committee member is familiar with the detail before him, and that the greater divergencies of opinion will have been reconciled prior to committee meeting, final agreement as to the desirable inventory and production program for the coming quarter will be decided upon promptly, the resulting figures being entered against the "committee" heading.

Moreover, when the committee determines the final authorization for product classes, it also fixes the extent to which personnel at the works should be increased or decreased to carry out the production program. The limitation upon personnel requirements is in terms of total only and it is not so strictly enforced that shortage in production should result



ORDERS, PRODUCTION & INVENTORY··· COMBINED WORKS——
EXCLUDING INTER-PLANT
CLASS 014
(ALL IN TONS)

CAPACITY = 1050 TONS PER QUARTER
= 350 TONS PER MONTH

1922 AVERAGE INVENTORY = 3.5 MONTHS

INVENTORY STATUS SUGGESTED BY PLANNING	END OF 1ST QUARTER				END OF 2ND QUARTER			
	UNFILLED ORDERS	FINISHED STOCK INVENTORY			UNFILLED ORDERS	FINISHED STOCK INVENTORY		
		TONS	NO. OF MO'S	TONS INC. OR DEC.		TONS	NO. OF MO'S	TONS INC. OR DEC.
	345	771	3.2	−50	305	721	3.2	−50

REVISIONS IN PLANNING ESTIMATES	DURING 1ST QUARTER						DURING 2ND QUARTER					
	NEW ORDERS	ORDER FUND	PRODUCE	SHIP	RESULTING CHANGE IN		NEW ORDERS	ORDER FUND	PRODUCE	SHIP	RESULTING CHANGE IN	
					UNFILLED ORDERS	FIN. STOCK					UNFILLED ORDERS	FIN. STOCK
PLANNING	1000	1075	680	730	+270	−50	730	1075	720	770	−40	−50
SALES	600	675	✓	630	−30	+50						
PRODUCTION	✓	✓	600	✓	✓	−130						
ASST. TO PRES.	900	975	✓	✓	+170	✓						
PRESIDENT	950	1025	✓	✓	+220	✓						
COMMITTEE	950	1025	✓	✓	+220	✓						

FINAL RECORDS	UNFILLED ORDERS		NEW ORDERS			PRODUCTION			INVENTORY	
	PLANNED	ACTUAL	DEAD LINE	PLANNED	ACTUAL	PLANNED	SCHEDULED	ACTUAL	PLANNED	ACTUAL
JAN. 1, '24										
JAN. 31		75			295		200	205		821
FEB. 29		128					240			
MAR. 31										
1ST QUAR.	295		1000	950		680			771	
APR. 30										
MAY 31										
JUNE 30										
2ND QUAR.			730							
JULY 31										
AUG. 31										
SEPT. 30										
3RD QUAR.			685							
OCT. 31										
NOV. 30										
DEC. 31										
4TH QUAR.			494							

PLANNING AND STATISTICS DEPT.

BOSTON, MARCH 31 1924

Figure 10.

because of an attempt to live up to an established personnel figure. When the committee authorization has been passed on to the vice-president in charge of production, it is within his province to break down the total demand upon the combined works to production quotas for the individual works. When the works receives its quarterly quota, it is within the province of the particular works to suggest to the vice-president in what portion of the quarter the bulk of the production can best be scheduled. When the monthly program has been authorized by the vice-president, each works manager breaks down the month's quota to quotas for each department. As each month of the quarter approaches, the works manager provides each department with its coming month's quota and, after the close of each month, comparison is made of actual production against quota production by the various departments.

Thereupon, there is published in the works house organ a comparative tabulation of actual production against quota production, just as actual sales are compared against quota sales in the sales department house organ. In the case of the works' comparison, however, there is not only comparison of actual production against estimated production, but also a comparison of actual number of personnel compared with authorized number of personnel, with a third comparison showing the net efficiency in view of both actual production and actual personnel. For instance, a 20 per cent increase over production quota, secured by 96 per cent of the authorized personnel, would represent an efficiency against quota of 125 per cent. Thus, it is seen that the statistical control, establishment of quotas, and check-up of actual performance against quota, is carried up to the controlling committee from the individual sales unit and brought down to the individual department in the individual producing unit.

It would be disappointing to the reader to have read thus far without an opportunity to satisfy himself as he asks the question—"How does it all work out in practice?" It is realized, of course, that performance comparisons of actual against estimates are very unsatisfactory as really evidencing the adequacy of any business procedure. One may always select incidental favorable comparisons, neglecting to report the many unfavorable ones. On the other hand, many comparisons which look unfavorable are really very favorable when all the circumstances are known. To compare the actual percentage of the total year's sales attained in the first quarter of 1923—namely, 26 per cent—with the assigned proportion of the year's business—namely, 23 per cent—will suggest a fairly wide margin of error. This is true also in comparisons made of the percentages representing first half year's business anticipated to be received—namely, 48 per cent—against the actual attained or 57 per cent. And again, to say that 110 per cent of the full year's quota was actually attained will suggest at least a 10 per cent error in estimating.

Quite on the contrary, however, further analysis of the performance reveals that one very tangible reason why sales were recorded abnormally early in the year, and in amounts exceeding anticipations, is *because the estimate had been made.* It would have been difficult to have made such a poor showing against the estimate had we not taken steps, because of the estimate, to change the condition which might otherwise not have been anticipated. Having committed ourselves to produce material for stock up to the dead line limit, however, placed us in a position to ship out stock much earlier in the year than had ever happened before. Moreover, the planning enabled us to produce an additional amount which could not have been produced had we not taken just such steps to increase production well in advance of the sudden increase in demand. Incidentally, this increase of orders came at the time of greatest seasonal efficiency in production, at a time when costs were low with reference to selling prices. There was, then, the net effect that the bulk of the year's production was sold and shipped during the brief period of peak prices, instead of being held over for shipment after anticipated price decreases had become effective. Such are some of the advantages of control in anticipation of a rising market and of the consequent reward reaped during boom times.

It is obviously a poor control, however, that will not work both ways. In the spring of 1923, when all the then recent records indicated continuously increasing business, we were faced with the necessity of changing our course because of the certainty of a change in the course of the business cycle. In all forecasting there is always the necessity of determining future probabilities from three view points: first, as to the probable *direction* of the future trend; second, as to the *time* of change in trend; and, third, as to the *extent* of the movement in its general direction.

Properly to appreciate their significance, performances need sometimes to be evaluated in the light of

SOME LAST-HALF 1923 ESTIMATE PERFORMANCE COMPARISONS

(Estimates which entered into late 1923 control)

(All estimates recorded in reports in month stated)

	Month	For	It was necessary to estimate the variable			Then to select a Constant Relevant Operating Ratio			In order to plan for Desired Levels of these Assets on 12/31/23		
			Factor	Estimated	Actual		Esti	Act.		Planned	Actual
A	June	Works' Production—Inventory Control	Combined Works' 4th Quar. 1923 Orders: (a)—In % *under* 1st Quar. known levels......	58%	59%	Average "desirable, yet possible" turnover rate for each product group	—	—	Combined Works' In Process inventories at 12/31/23: (a)—In % *under* July, 1923 levels............	20%	16%
			(b)—In actual tons of orders................	7000	6860				(b)—In tons of inventory.	3460	3640
	Dec.	Revision of above	Combined Works' Jan.—Feb. 1924 Orders: (a)—In % *over* known 3rd Quar. 1923.........	102%	93%				(Excess permitted because of anticipated Jan.—Feb. 1924 peak of orders—see Est. at left)		
			(b)—In actual tons of orders................	9920	9530						
B	Aug.	Payment of Notes by Liquidating Receivables	Nov.—Dec. 1923, Daily Rate of Sales (Billings): (a)—No. $ drop from known spring peak levels of Mar.—Apr. Daily Rate.................	$32,500	$30,000	Number days sales tied up in total receivables:........	40	42	Liquidation of Receivables (a)—No. $ less than June, 1923, levels (that is, the amount to be released to pay notes)..............	$640,000	$400,000*
			(b)—Resulting Nov.—Dec. Daily Rate	50,000	52,500				(b)—12/31/23 Balance...	$2,000,000	$2,240,000
			(c)—Dec. Total Sales....	1,200,000	1,225,000				*(Failure due to greater number days—less discounting—and slightly greater sales, all errors concentrating in this margin of reduction)		
C	July	Branch Inventory Control	Total Branch 4th Quar. 1923 Purchase Cost of Stock Sales (Inventory carried at Purchase Cost): (a)—In % *under* 4th Quar. 1922 levels:....... (2nd Quar. 1923 had been 90% *over* same quarter in 1922.)	25%	24%	Average number months' sales represented by branch inventories is 3 months. But on declining market it would be policy to have a lesser number of months, as shown.........	2.6	2.7	For Total Branch Inventories (based on sales and turnover rates) established—marks to be reached by 12/31/23, were set (a)—In % *under* July, 1923 levels:............ (Some a full 50% cut ordered)	39½%	39%
			(b)—In Actual Dollars..	$1,077,000	$1,067,000				(b)—In Dollar Value (at cost)..................	$940,000	$950,000

Figure 11

the fact that the estimates mean a complete reversal of the trend; that is, a change in "direction." Such comparison supplements the impression gained through the usual comparison necessarily made upon an absolute basis, that is, of the actual volumes against the estimated volumes. Often it is possible to throw into relief the hazard behind the estimate, if we bring out the contemplated extent of change from some previous actual peak level, particularly if this previous actual peak level was the most recent level known at the time the estimate was hazarded. Even this sort of comparison is, perhaps, inadequate to tell the whole story. In the elevation of the effectiveness of "forecasting methods" as against "no forecasting methods," the true comparison should be of the actual results obtained against the results that "might have been," had judgment been affected only by "boom" propaganda. Particularly at the very peak point of the business cycle just prior to a decline, there seldom fails to be generated a large store of optimism concerning the future.

In such a light, then, the final tabulation, Figure 11, shows, as adequately as may be pictured by a table, some performances against estimates made at the peak of our business cycle. The estimates, of course, fixed in a record the anticipated or desirable effect of our prompt attempt at certain and adequate liquidation, while there was yet fair chance to do the liquidating. In the table there is first pictured our estimates concerning the rate of incoming business and then the net effect upon all related assets. To conserve the assets it was essential, of course, to control all the others factors in terms of the anticipated declining demand.

From the table given there is omitted any reference to the combined works' finished stock inventories. December 31 inventory marks were established, but as the period progressed and as December 31st approached, it became more and more obvious that in our cycle we were to have a "secondary peak" in the first quarter of 1924. Our December estimate of the extent of this secondary peak in terms of recovery over the lower levels of the third quarter of 1923 is shown in the table. In consequence, it was undesirable to insist upon low finished stock inventory. Accordingly production was directed toward producing an adequate finished stock inventory upon a revised schedule, although it was still considered desirable to maintain the fund of work in process at the originally established conservative levels.

In conclusion it is to the point to recall the quoted statement that "there isn't a single business in the world to which the theory can be applied . . . . The cycle theory . . . . is applicable only to the total of business conditions in general." Today, we, too, would be indorsing this statement *if* the raw summary figures of the particular business were to be compared indiscriminately with general average cycle conditions of the total of all external business. But we commit ourselves to the proposition that there is a definite aid to control attainable through analysis of business cycles, *if* an industry will define its own cycle action, devoid of other than cycle variations; *if*, upon such a common ground of comparison, it will differentiate its own cycle of orders, for instance, from its own cycle of billings; and *if* it will compare the cycle of any one of its own factors with only the external cycle factors which are directly relevant to that one internal factor. Then will the industrial administrator look behind the cautiously worded general forecasts for "average business," only to find that there is some "rhyme and reason," some consistent "cause and effect" relation between a defined group of external business conditions and the cycles, past and future, of his own business.

There remains then but the definite application of his acquired knowledge, tempered by experienced judgment, to the adjustment and control of his practical every-day affairs. This final essential in the long chain of requirements is the test of value of all that goes before. *Will it work?* Best qualified to answer, undoubtedly, is the administrator who has travailled through the early attempts to harness in tandem "the cycle theory" and "increased profits."

Therefore, in closing, we quote the statement of our own President[2]—a statement which, though based only upon some of our earlier experiences, would nevertheless be not only essentially duplicated but also broadened and strengthened after the experiences of later months.

"Here are the results for the year 1922: Our actual sales came within .5 per cent of our estimate. Cumulatively the first six months were 8 per cent in excess of the estimate; the first nine months were 4.3 per cent, but the full year's figures were so close to the estimate as to be a coincidence. We do not expect again to equal this particular record. We have reason to believe that the earlier months of the year were thrown out of line because of our increased ability to ship promptly. Having advance information, we were able to decide on a production plan that would give us an even flow of material throughout the year, building up our stocks in the spring and summer months to meet the fall demand. This accomplished not only better service to our customers but greater economy of production, more even employment for our workmen, and a great decrease in labor turnover. It enabled us to anticipate our material requirements and to take advantage of low price conditions. It gave our treasurer exact information as to financial requirements. It made it possible for me to place before our directors a definite estimate of the amount of money that would be involved in producing in advance the excess stock necessary for fall delivery, and it justified them in adopting the program because I could assure them that this investment could be liquidated before the end of the year. It enabled us to set up an ideal inventory for the end of the year and to work toward final liquidation to this ideal point. It proved that this inventory control was practicable because we came within the limit set by my office.

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[2] The control of an Industry in the Business Cycle, *Harvard Business Review*, Vol. I, No. 4, July, 1923; reprinted in *Bulletin of the Taylor Society*, Vol. VIII, No. 4, August, 1923.

"Of all these benefits, probably the greatest has been our ability to operate on an even basis throughout the year. Under the old conditions we would have produced 16 per cent of our total requirements in the first quarter; 22 per cent in the second quarter; 28 per cent in the third quarter; and 34 per cent in the fourth quarter. In 1922 it was possible to equalize approximately the quarterly production figures. In these days, when seasonal employment is one of the country's greatest problems, when labor turnover is great and when an actual shortage of labor has occurred, continuous employment at fair wages is the stimulus to the good workmen that no temporary attraction can equal. Carried over a period of years it will secure the type of labor that makes for economy and efficiency. This does not mean, of course, that we can counteract the cyclical fluctuations. The fact that we are able to take care of this problem within each calendar year is a substantial step in the right direction.

"Budgetary control is now one of the fundamental policies of the Walworth Company. It is our record of the past, our index for the present, and our guide to the future. We believe it to be an essential factor in our success."

THE main thing is not employee ownership, but the fusing of the two classes, the laborers becoming capitalists. There can be no class consciousness after that. They are all capitalists and when their capital becomes sufficiently abundant so that there is real difficulty in finding investments, interest rates must come down, and a good many people living on the returns from capital will have to go to work to supplement their income, by working for wages or salaries, so that it will work both ways. There will be a blending of the two classes until all but the very poorest laborers will have some capital and all but the very richest capitalists will have to do some work to make a living. Then, we will have achieved something like equality in all occupations. We shall have wiped out the distinction between capitalist and laborer, and one of the ideals of modern democracy will have been realized. (T. N. Carver, Lecture at Bureau of Personnel Administration, April 11, 1924.)

IT HAS long been our thought that one of the primary duties of a serviceable business is to see to the perpetuation of itself. It is economical to society—and that means all of us—to keep a settled business going; it is costly to society to be forever financing the experiment of new ones. (A Lincoln Filene, *A Merchant's Horizon*, p. 11.)

SOCIETY can well afford to pay a steadily rising wage-bill so long as it is steadily enriched by new intelligence and by a higher capacity for the producing of wealth and manhood.

And out of a mass of labor more and more relieved of the rougher drudgeries, more and more released to mental exercise and self-expression, I see emerging labor organizations with a keener understanding of the problems of business management, and greater readiness and fitness to undertake an active share in them. (A Lincoln Filene, *A Merchant's Horizon*, p. 224.)

Scientific Management in Other Countries Than the United States[1]

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ADVANCES in scientific management in other countries than the United States have a deep significance to this country, especially to management engineers. They have an historical significance, not only in the amount and rate of advancement but as comparable to similar advances in this country during the same length of time. They have a geographical significance, not only as they refer to likenesses or differences in geographical conditions in the different countries, but as they refer to nearness or remoteness from the United States. They have a statistical interest, in that we shall in time be able to compare results and trace causes. They have an important economic significance, in their relation to the prosperity of the various countries involved. They have a sociological significance, as referred to the other factors that make up the status of the people of the various lands. The psychological significance can scarcely be overestimated, for a close study of the advances and the retardations furnishes information as to behavior that will furnish studies for generations of psychologists. But for the Taylor Society, nothing in this advance can be so important as its educational aspect.

This Society, as advocating and as sponsoring scientific management, is obligated to all the nations of the world. It must learn from a study of the advances in other countries two things—first, possible improvements that it can make in its own practice, and second, possible assistance in the development of scientific management it can offer these other countries, whether this consists of removing obstacles to its advance, of furthering activities already prospering, or of cooperating in finding new units, methods and devices of measurement that can be used. It is the aim of this paper to present conditions abroad with these thoughts in mind; to make clear the duties of this Society during the decade to follow if the Society is to be a true exponent of its stated beliefs and is to assist this country in maintaining its leadership in the field of scientific management which is at present deserved and universally acknowledged.

Data on which this Paper is Based

This paper is based on a mass of foreign literature in our files; observations made during conferences with visitors from abroad; correspondence extending over the past fourteen years, and in some cases longer, with correspondents in many countries; and data collected during more than a dozen trips abroad which consisted largely of conferences with those interested in scientific management and of installation work since 1900 in the plants of foreign clients. We desire to acknowledge cooperation from all our past and present clients and from those whom we have interviewed or with whom we have corresponded, especially our pupils in management abroad, many of whom were at the same time our teachers.

Every statement made in this paper is based upon carefully selected and verified information, which is at hand and can be examined by anyone at any time if the authorization of the one furnishing it can be secured. We should have been glad to mention the names of all those who have given us information, as well as of plants where advances in management have been made, but many have requested that this be not done. Because of the necessity of a brief presentation, an enormous amount of information valuable in itself and as an indication of the amount of interest in the subject, has had to be omitted; but we feel that not only our appreciation but that of the Taylor Society goes to all those who have cared enough to further the cause of scientific management to make this information available.

A first glance over the data collected brings before one a host of interesting personalities, for those who are advancing the cause of scientific management in other lands are not only splendid types of the nation they represent but fine specimens of human beings.

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[1] A paper presented at a meeting of the Taylor Society, New York, January 26, 1924.

Many are approaching the problem of scientific management with the missionary spirit of service, and with the belief that maximum waste elimination is for the interest of all. We quote a Danish professor who writes "Having now attained the age of 70, I am going to give up my chair in the University, but I hope to get sufficient strength to work for scientific management—as far as I can see, one of the most important social problems at present." And there is a professor of engineering in England who is doing the same splendid thing. It may surprise you to know that in the past the largest group interested in scientific management abroad has consisted of professors of psychology, physiology and psycho-technic. There are also engineers, economists, statisticians and men whom we might class as educators, altho whatever their fields of activity, educated men abroad are almost always also technical men. There are an enormous number of scientists, especially research men, and of writers interested in scientific subjects. There are comparatively few manufacturers, altho there are some exceptions. We have a list of "brilliant examples" of satisfactory installations in many countries—some made by American consulting engineers, some by local consulting engineers, some by engineers attached to the plant. Each represents one or more interested manufacturers. This list, unfortunately, is not available for publication. There are some few labor leaders interested, fewer workers and still fewer government officials. Those who are doing the most writing abroad are, or have been, teachers in universities or technical schools. Perhaps this is only natural, as while scientific management spread in this country from the plant and actual practice, there it is spreading from the colleges and other educational institutions.

You are doubtless all acquainted with many of the types of persons who are furthering the cause of scientific management abroad: A Japanese psychologist who has read much, written in many languages, and corresponded with many leaders; who comes to this country to get in touch with latest findings and carry them back to develop in the educational institutions and in the industries of his country. An Icelandic psychologist who comes to study refinements of measurement and to apply the most intensive scientific investigations of the One Best Way to Do Work to the industries of his country. A young Dutch engineer who brings knowledge of the advanced standardization methods of Holland and comes to get actual experience in American industries, and to compare methods with theirs. A young English university man who, paralyzed from an accident while swimming, turns to research not only as a relaxation but as a panacea, and does much to awaken his countrymen to interest in scientific management before his short life is ended.[2] A distinguished French scientist, a master of his own branch and a leader among his countrymen, who comes to cooperate with our leaders in thought and to develop an international method of attack. A brilliant young German with the ability to think equally well in several languages and many subjects, capable of comparing methods and results and indicating trends. A Spanish psychologist who thinks in terms of vocational guidance for all youths of his country, and assists in getting together groups of men from all nations interested in such subjects and spreading their findings before the world. A young Canadian Government official with a passion for better methods, and not only a thirst for information but a desire to apply everything he learns in order to get a personal reaction. Army and navy men—Swedish, Belgian, French, Japanese, etc.—it is such types as these who are stimulating interest abroad, and all of these mentioned and many others are of the type who desire to cooperate, who wish to make scientific management not a secret of the few, not something belonging to the informed and lettered, but a working practice for the entire industrial world, that lower unit costs of work and higher wages simultaneously may go far to solve the problems of lower costs of living everywhere.

Sources of Scientific Management Information Available to Other Countries

We have mentioned visitors to this country, and the number of such visitors is increasing, as is also the diversity of types. Even in the early days of scientific management it was customary for young men to come from abroad and enter the industrial plants of this country as learners, apprentices or workers, just as similar young men came and took courses in the colleges and universities. The number of these is increasing. Practically every day brings news of such young men coming to this country, and almost every steamer has one or more of these among its passengers. The number of such young men more or less adequately trained who return and are working in their own countries is increasing also, and the next ten years will show an enormous increase in this group; and we may look for noteworthy results. Visits to this country of research men and of teachers are also increasing, though it is to be noted as of extreme importance that these are often of too short a duration to prove as profitable as we would desire to make them. A mistake of Taylor's, being repeated by a majority of our foreign visitors and also by many in our own country, is to underrate the great value in the education of a manager of actual experience with the old fashioned methods of management. It was exactly that contact which developed Taylor, who, we all know, was not naturally adapted to be a manager. It was his actual contact with problems under the old type of management that brought out the Taylor system of management. Taylor was a great scientist, philosopher, economist and engineer, but he was not a psychologist nor was he naturally a manager. Yet thru his experience with the old he became great with the new methods of management.

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[2] See *Science*, August, 1922, and *The Spectator*, July 15, 1922.

It would enable engineers and managers on this side to do much more for visitors if they were to have had previously actual experience with the problems of management and also a thorough acquaintance with the literature of scientific management, and knew exactly what they desired to find out, whom they desired to meet, how much time they could allow to each branch of their investigations, and the amount of information they could reasonably expect to acquire in a given time. We have personally met many young men from Europe who have had a comparatively short experience in one or two American plants, and have returned to Europe with the firm conviction that they had learned scientific management. The editors of our management papers should correct this impression and should disseminate the distinction between application of the principles of scientific management in any one shop and the knowledge of the underlying principles of measured functional management for enforcing the conditions for obtaining the One Best Way to Do Work. Perhaps no one thing has injured the reputation of American management methods so much as has the return to Europe of young men who have spent time in one or two shops in America, and have seen the application but have not been taught the underlying universal philosophy of scientific management.

Besides accounts of visits made to this country, there is at the disposal of the foreign reader the literature written here, but too often the writers of such literature do not have the foreign reader in mind. It is, perhaps, too much to expect that highly technical literature shall be expanded with the aim of making it more comprehensible to foreign readers. There is much room in this country for less technical treatment of the fundamentals of scientific management and this will be useful not only to foreigners but to beginners in this country. There is also much room for interpretations of scientific management from the psychological, economic and other viewpoints presented in simple form, yet with a background, a degree of indusputable accuracy and an amount of reference material that will lead the reader to have confidence in what he learns and to continue in his learning.

The number of those acquainted with scientific management traveling through foreign countries is increasing, and this is a source of information there. Unfortunately, however, many who have done much of the talking and some of the installations abroad are not adequately informed or trained and have done much more harm than good. We may perhaps look forward to exchange professorships which would bring us much profit, in that we would learn much of foreign opinion and feeling and be able to orient ourselves in the foreign fields. No one who has visited in foreign countries can fail to have noted the hearty welcome extended, the enormous desire to profit by any information offered, and, in many cases, the masterly manner in which all such information is extracted from the willing or reluctant visitor. When one of the writers had the pleasure of accepting an invitation to visit Czechoslovakia recently, he was met at the frontier by an official with an official program covering practically every moment of the day and night, and left after a short but most stimulating visit, mentally enriched thru contacts and experiences that will remain a treasure of a lifetime.

Foreigners have also at their disposal, as a source of information, translations of the classics of scientific management, but only one who has suffered from a typical translation can speak from the heart as to their value. Many foreign translations of American books on management have had the sense completely changed, because the translator preferred to rewrite in words that he himself could understand, regardless of the meaning of the result. It is interesting to note the volume of translations now existing.

We are told that twenty thousand copies of Taylor's "Principles of Scientific Management" have been sold in France alone, and we know that translations of this and other classics have been made into most of the languages of Europe and several of Asia as well.

Another source of information most valuable to foreigners is that which comes through American firms having affiliations or branch offices in foreign countries. Where these American firms are properly systematized, the results must be, in time, far reaching. However, few of our large industries with branches in many countries stand at present as exponents of any complete installation of scientific management, as we understand the term.

Expression of Reactions to Scientific Management In Other Countries

As for the reactions to information received, we get in touch with these partly through the lectures that our visitors deliver when they return to their countries, and through the translations made. We must not forget that to most foreigners a translation means something very different than it does to us. An American translating a foreign book has in mind *conveying the ideas* of the writer as clearly as possible and in the most nearly correct English possible. A foreigner translating an American book too often has the idea of *interpreting* the thought to his countrymen in the best language possible. He hesitates not at all, usually, to change the form of expression or arrangement, and all too often changes the thought as well. This is not only acknowledged but defended by the average translator and his countrymen. This does not apply alone to translations into foreign languages. It applies to American books printed in England. Often, even the title of books have been changed "to make them sell," and the entire meaning of the title is not only changed but lost.

While there are many fine translations, it certainly would be of value if the Taylor Society would make it its business to go over carefully every translation of any of Taylor's works and ultimately of any of the recognized standard books on scientific management to evaluate them as translations, for much has been done to discredit scientific management abroad through translations that are not worthy of the name. If such books were published as interpretations or reviews of the Taylor System it would be one thing, but they have no right to stand as translations or as presenting the principles and practice.

Further vehicles of expression are papers and books which usually come to us soon after they are written and which often cause us to turn to the material upon which they are based, questioning the adequacy of our own American thought and expression. There is also the teaching, the effects of which we see in the young men who come to us for instruction or positions. Their viewpoints again often lead us to consider the adequacy of the American literature. A most striking outcome of the reaction to scientific management is the amount of testing being done abroad, both in the schools and in industries. This is taking place in England, France, Germany, Iceland, Belgium, Holland, Czechoslovakia, Japan, and in many other countries. Finally, there are rapidly being formed abroad societies or institutions most of which, so far, take up either vocational guidance, applied psychology or some such ally to scientific management. The conventions and proceedings of such societies or institutes form a most valuable source of information. It must be remembered that while scientific management cannot claim credit for—does not even antedate—psychology, vocational guidance, etc., it has done much to foster the growth of applied psychology, of "psycho-technic" and of the making of actual tests in the industries themselves. The library of the Taylor Society would be much enriched through the proceedings of the meetings and conventions of such societies, which, while they are not always closely affiliated with scientific management, not only are much influenced by it, but will certainly influence its future developments.

Objections Advanced and Obstacles Encountered

In our review of progress during the last ten years abroad, we must pay special attention to objections advanced and to obstacles encountered. Personal observations abroad and much of our recent correspondence make this clear. In France we find that advances in scientific management have been retarded by a feeling that knowledge of what is happening must be confined to those in the industry itself, and in most instances in the particular plant. We know that this feeling still exists to some extent in this country. It must be overcome. No real progress can be looked for while such a feeling exists. Mistakes are repeated, advances retarded and thorough cooperation is impossible. This feeling that advances should be kept secret exists to some extent also in Germany and Switzerland, but in Germany the feeling is being broken down by the efforts of standardization advocates who are pointing out common problems and common solutions. In France there is advocacy of installations through corporate groups and unions which would do much to break down the desire for secrecy.

We hear much, as an obstacle to advancement, of the lack of technical societies in scientific management. This is to be noted in Mr. Sheldon's excellent paper for the Taylor Society.[3] It is also to be noted in the letters of our French correspondents and in correspondence from Belgium. Another obstacle is the belief that scientific management applies only to repetitive work. This is advanced especially in Belgium, where, because of the nature of the country and of its demands, there is a great diversity of product and many plants turn out only small quantities of any one article. Another obstacle encountered is the opposition of government officials who do not understand and who must be conciliated and informed. There is also in several countries a need to educate and conciliate even the university people, as well as both employers and employees. It would not be wise to mention the name of one country where all of these classes must be conciliated and where in spite of this the brave advocates of scientific management are making distinct progress and look for more progress in the immediate future. The effect of the war and the depression in business are noted in many countries, but seem to be felt especially, perhaps, in Canada, where also there is complaint of lax management because of too plentiful labor supply. In spite of all this, there are, in several countries, government bureaus that are investigating scientific management, or such bureaus are planned for.

In Canada the Honorary Advisory Council for Scientific and Industrial Research recommends that general investigations be superceded by specific investigations. To quote: "It is felt that at this stage the best way for the committee to gain the confidence of industry would be to *conduct some specific piece of research* from which *definite* conclusions could be drawn on some *concrete* problem, however small."[4] This could furnish a text for American management societies! In Germany there is the feeling that there has not been enough stress laid on the *science of management*, and this obstacle they are strenuously trying to overcome. In France there are as yet few or no experts in scientific management working in a consulting capacity, and they seem to feel that they progress very satisfactorily without such experts. England is profiting, she feels, by such experts as have practiced there. So is Germany.

From France comes a very strenuous indictment of American literature. It is felt that there is much confusion in the form of Taylor's books; that in all the literature there is a poverty of example, which Taylor's books illustrate; and that the enormous results there cited suggest "American bluff." There is comment on lack of tact in Taylor's presentation, on certain phrases that offend the worker, on the undesirability of the selection of the strongest and ablest, and on the fact that the increase of the task offends the worker's principles. The belief is elaborated that a complete installation demands too much time, much money and intensive laboratory investigations, too many specialists and too great an effort to secure cooperation. These criticisms all indicate need for supplementing the present presentation of the Taylor system, if it is to make headway. Copley's life of Taylor[5] will do much to explain his work and his books. A life of that great pioneer, philosopher and manager, James M. Dodge, and widespread literal translation of his practice and writings would add invaluable information as to the "human side." The increased interest in developments since Taylor's day demands that progress in the science of management be outlined and evaluated by trained writers like Drury, who really devote themselves whole heartedly and in a non-partisan and constructive spirit to finding and presenting the facts. Such work demands background, intensive training, capacity, fair-mindedness and both writing and teaching ability. A hard standard to reach!

Many foreigners, notably those in Denmark, remark on the conservatism of their workers and their employers and the need for making advance slowly. This calls for advice on methods of presentation and on sequence of installation, planned to effect necessary changes without any jolt to existing organization, by carefully thought out stages, each adjustment to be satisfactory to all concerned.

From England we hear not only of British conservatism, but of the pride of the British in this conservatism, of objections to accepting anything "that has not been fully proven," of objections to a new vocabulary and a desire to keep old terms and functions unchanged. The foreman has always been accepted as the accredited representative of management, with whom the worker feels his contract is made; and in adopting scientific management there, the foreman is made the channel through which all functions must pass. With such adapting comes at times an entire misunderstanding of the uses and value of time study and much overemphasis of cost accounting. This indicates a distinct call for this country to make plain the principles and practices that it advocates; the need for extreme care in changing any part of the mechanism without considering its relation to the whole; the place and value of time study, motion study, and other methods of measurements; the relation of costs to the other parts of scientific management and the place of the cost accountant in management work.

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[3] "The Art of Management from a British Point of View," *Bulletin of the Taylor Society*, Vol. VIII, No. 6, December, 1923.

[4] The italics are ours.

[5] Frank Barkley Copley, "Frederick W. Taylor, Father of Scientific Management," Harper & Brothers, 1923.

In some countries we find evidences of pirating American books, articles, ideas, methods and mechanisms. Even when due credit is given these are too often adapted to suit some imaginary need and, thus adapted, are entirely unusuable as part of a complete installation. This is not important as affecting those involved on this side who are too busy to be much disturbed and too sure of the necessity of scientific management as a world force to wish to retard its growth through any avenue. It is most important as showing the need of clearer presentation here and of greater publicity as to sources of information and available material.

One of our own countrymen seems to believe that the Taylor system overemphasises the mechanical aspects of work and is "lopsided" because it lacks the technique of human behavior. He finds this viewpoint strongly backed by opinions in Germany, and believes that their great development there in psychotechnic is largely an endeavor to supplement this lack in the Taylor system as they understand it and as they believe we are installing it.

We find, in a Canadian interpretation, a confusion of scientifically studied operations with scientific management, an idea that such management applies only to manufacturing, and a confusion of the teaching of the principles of commercial business, with teaching of scientific management—and these confusions are by no means confined to Canada!

You may doubt the validity of these objections or obstacles as representing any large body of thought or any group of thinkers. If you do, you have only to go over the foreign literature, as it appears in any periodical or as reprinted and revised in this country, to find every statement made here substantiated. Ideas are certainly misinterpreted and misapplied unintentionally, but the fact remains that the most luxurious of foreign growth does require much pruning.

To summarize, it cannot be overemphasized that the underlying causes of these obstacles to advancement abroad or of objections to such advancement lie in faulty practice, teaching or presentation in this country. We must elucidate our belief and our practices so that they cannot be misunderstood, and carefully review European and Asiatics beliefs and practices, in order that these may be corrected and careful recommendations given. In other words, a clearing house is needed.

Methods Advocated and Found Profitable

We turn now to causes of advancement abroad, and summarize first advances in education along lines of scientific management. These are most astounding. In France there is an endowment of one hundred thousand francs a year given by one of the prominent manufacturers, which enables technical students to visit highly organized plants. There is also the start of an organization which meets every month to discuss problems of management which, while it has as yet only a few members, will doubtless grow steadily. In Denmark efforts are being made to introduce efficiency as a subject in the polytechnic schools. In Iceland, the professor of psychology at the University of Reykjavik is the foremost advocate and exponent of scientific management in the country. He has visited America, is doing installation work, and is interesting his students and the entire community in the subject. In Italy there is an institution for special instruction which makes physical and mental tests, provides vocational tests and assists in placement. There, as in many other countries abroad, a start towards education in scientific management is being made through advances in applied psychology and through correlating applied psychology with management. The conferences held at Barcelona in 1921 and at Milan in 1922, while discussing primarily vocational guidance, showed enormous interest in scientific management and invited papers in that field which were presented, enthusiastically discussed, and published in their transactions. In England, university and extension courses already exist everywhere, and while these are criticised as "mostly sociological," they are undoubtedly stimulating interest in the subjects throughout the entire educated community. The Industrial League and Council and similar bodies are also giving courses. These are characterized at present as "inspirational," but will doubtless become more specific as time goes on. In Belgium there are conferences conducted by the universities in industrial centers. In Canada the director of a technical institute states that scientific management is not taught in the schools, but there is every indication that it is being taken up by groups of educated members of the community everywhere.

One correspondent, who is especially interesting—a soldier in the great war and a prisoner in Holland—who kept up his studies in scientific management during that time and undertook the translation of an American book on the subject, informs us that the universities and other institutions are enormously interested in the subject and are spreading information throughout the country. Cornelia Stratton Parker, author and investigator of working conditions in industry, on her recent return from Switzerland and a tour through many countries abroad, tells us of the growing interest in educational as well as other fields. In Japan there is a psychological institute as well as a technical university, and translations of books on efficiency have been made. We have also very recently received the journal of a Society of Chinese and American Engineers in China which includes in one number reprints of two American articles having to do with management, one on an indexing system for Engineering Societies by Mr. Craver, and the other one on applications of motion study. We know also of installations by a Chinese graduate of an American college. The work in the Dutch universities, especially in the University of Delft, is well known and so also is the work of the German universities, where in Berlin, Dresden, Aachen and others centers of thought, not only the principles but the technique of management and psychology are being developed to a high state of perfection.

We have had occasion to judge of the products of the Dutch universities and find them not only instructed in the principles, but able, after a small amount of instruction, to enter profitably into American industry and to make positive contributions not only to production but to technique.

It is not surprising to find that the work of applied psychology is carried on by well established institutions, but it is surprising to find that the work of vocational guidance which is comparatively new has so soon become established as of scientific value, is conducted by institutes, is closely affiliated with both applied psychology and scientific management, and is obtaining excellent results. In Spain the Institut d'Orientacio Professional is adequately supported by the city and province, though it was founded by the initiative of the professors. It tests young men intensively in order to place them congenially in conveniently located places. It has four sections—informational, physical tests, mental tests and statistical. Its tests are exhaustive and the results are correlated with findings in America and in Spanish industry. The institute also conducts tests for the conductors of the Municipal Auto Bus Company and for military aviators. Thus the professors keep in close touch with industry itself. It plans cooperation with engineers and is endeavoring to secure a burden in the department of the Minister of Work at Madrid, which shall investigate scientific management and its application to the entire country.

Similar institutions exist in England, France, Italy, Czechoslovakia and other countries. In Czechoslovakia the Institute of Applied Psychology is a part of the Masaryk Academie of Work, which insures due emphasis on the industrial side. The head is a psychologist who has medical and technical experts affiliated with him. The boys of the country are tested with the latest tests and apparatus of all countries. The results are most noteworthy, and those in charge feel that they "have passed from the period of the speculative swamps into the running waters of empirical research." Their findings are most interesting, for they are not only endeavoring to discover in every case the lowest grade of intelligence that can handle any given type of work, but also to make sure that any types capable of higher work are at once tested for advancement. In fact their findings along some of these lines of work seem pioneer work. In Denmark the advantages of small committees to handle problems of vocational guidance and placement for local communities are advocated. These committees are to write texts for apprentices; a typical committee is to consist of a professor of a psychological laboratory, a professor of economics, a government director, a working man and an employer. It is planned that such a committee in a chief city shall serve as an example for the formation of similar cooperating committees throughout the country.

There is much consideration abroad of the philosophy of management and of the relation between administration and management. This we see in England, and very plainly in the discussions in France. The interest in management seems to have developed along three lines. These are described as Taylorism, Fayolism, and Amarism, according to the findings of our own Taylor, of M. Henri Fayol, a distinguished scientist, and of Prof. Jules Amar, who has for years cooperated with us in investigations concerning the crippled soldier, fatigue, and other lines of activity. The literature concerning Fayolism is of astounding volume and is creating an enormous amount of interest. Prof. Amar's writings are well known in this country as well as abroad and their distinguished significance is universally acknowledged. The distinction between these three branches of activity in France is very plainly drawn and must be thoroughly understood if the situation in France is to be appreciated.

There is little talk as yet abroad of the application of scientific management in selling and finance, although the subject is being considered in Germany. This is not surprising, however, in that in this country also the application in these fields followed the application in the field of production.

One of the most vital questions abroad is that of standardization. Sixteen countries at present handle this through standardizing organizations.[6] In Holland the value of the results from the Dutch standardization office are universally acknowledged. It is assisted in its work by eleven special committees composed of engineers in practice and in scientific institutions. One of our foreign clients is rejoicing that the manufacturers have come to the point where they are actually wording their orders in terms used by the standardization committee. Perhaps these satisfactory results have also assisted in popularizing scientific management, for installations in Holland seem to be singularly successful.

The progress of standardization in Germany is noteworthy as are the results. There is an increase in "vertical" management. This means that the larger works, manufacturing finished products of great value, make sure of the basis of their manufacture by purchasing factories manufacturing products of a lower degree of finish and even mines. Also, the horizontal organization has spread more and more. Works of the same kind associate for purchase or sales purposes and an association of this kind tries in its turn to become a link in the chain of a vertical organization. Throughout the country there is felt a need for more science, for accurate time and motion study, which is closely allied to the emphasis on standardization. The unstable currency has led to "a calculation of values in weight or measures of material used—and in amount of working time." This is so eminently satisfactory that it will probably continue even after the currency becomes more stable. There is also an enormous increase in better tools and in better material, such as stellite.

In Czechoslovakia the leadership in standardization is held by the Masaryk Academie of Labor. This has been functioning along lines allied with scientific management for only a short time. During 1922 and 1923 the work was largely educational. This has been so successful that they are now pressing forward to more intensive standardization. With the approval of President Masaryk and under the direction of an enormous number of scientists of first rank, work processes are intensively studied and the results put at the disposal of the entire community. Around the table gather, with an equal voice in the proceedings, psychologists, physiologists, economists, sociologists, engineers, employers and workers, with the work tools at hand, with the work processes demonstrated—all endeavoring to find the One Best Way for each work process for the individual worker involved with his available tools and material. The wealth, the resources, the brains, the interest, and the cooperation of all Czechoslovakia stands back of this work.

In Russia there is a strong and deep interest in scientific management, and in standardization, as also in applied psychology and vocational guidance. Mr. Walter N. Polakov informs us: "In Russia, the scientific management movement assumed several peculiar characteristics. In the old world its aim was *making profits* in the environment of *free competition.* In the Soviet Republic it was called upon to help in *making goods* on the basis of *cooperation.* It was therefore not limited to a plant, but extended over industry. Another temporal rather than local characteristic was shortage of skilled mechanics after the War, in which more men were lost than by all the Allies together, and especially after interventions, when proletarian regiments formed of skilled workers were wiped out.

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[6] "Progress in Industrial Standardization During 1923," by A. W. Whitney, Chairman, American Engineering Standards Committee.

The third characteristic of the Russian scientific management movement was that it assumed the form of a nation-wide educational campaign embracing farmers, all government employees, and school children. The fourth point of distinction is seen in the large scale laboratory researches, coordinated from the Central Institute of Work at Moscow, with thirty-two branches in various localities all over the country. The fifth characteristic follows from the above large scale undertaking, and reflects the national characteristic as well—namely, the theoretical thoroughness with which even minor details are studied and checked with the aid of higher mathematics. The sixth and last ear-mark is that the entire movement is regarded as a 'workers and peasants' method of rebuilding prosperity and happiness in a Soviet Republic, and not as a means of increasing the exploitation of one class by another.

"To illustrate these six points:

"1. The productivity of industries introducing scientific management in many cases has quadrupled since the start.

"2. The training of industrial workers, based on bio-mechanics, aided by micro-motion studies and supplemented by dietetics and psycho-physiological guidance.

"3. Educational features may be illustrated by the 'trials' publicly conducted by engineering courts, where the defendant may be a boiler showing low efficiency, and the prosecuting engineer accuses it and exposes the reasons; the punishment is, of course, corrective: to install draft gauges and make a gas-analysis, and to keep it on probation until good habits of industry are implanted. In villages, likewise, trials are held over a cow, for instance, accused of low yield of milk and proper diet is imposed as the corrective method.

"4. Research laboratories are in very close cooperation with all scientific societies, medical academies, clinics, psychopathological institutions, etc., as well as with university research and experiment stations and technological colleges. There are over one hundred such cooperating institutions and many demonstrating 'exemplary plants.'

"5. It is interesting that experimental data are always refined and finally reduced to the form of dynamic formulae, chemical reactions, mathematical equations, etc., striving at the fundamental presentation.

"6. Scientific management, being regarded as a matter of the life and pride of the workers' republic, is met everywhere with enthusiastic support. It is introduced also in government institutions such as the Supreme Court to schedule procedure and calendar, eliminate red tape, standardize the forms, train judiciaries in mathematical logic, and banish oratory."

While investigations along lines of fatigue elimination should form a part of all standardization, this is not always the case. In general, we have found, however, more cooperation in fatigue elimination abroad than in this country. There is a large quantity of literature on the subject in Great Britain, although in some of this literature the importance of eliminating unnecessary fatigue is not considered. There is strong emphasis abroad on the physiological side of fatigue and also on the necessity of founding fatigue elimination upon scientific laboratory investigations. While fatigue study was started in this country,[7] if leadership in this field is to be maintained, the efforts of the pioneers must be supported.

The same thing is true for the handicapped. So far as we know, the first paper on the possibility of re-educating the crippled soldier was written in this country,[8] but the work was undertaken so intensively in Germany, in France, in Belgium and in other countries, that this country must devote attention and effort to the problems involved if it hopes to equal the activities on the other side. This work also is closely related to standardization.

As for application of standardization in specific fields, such as in the simplification of spelling, we note abroad a strong desire for simplification and a willingness to cooperate with every nation and every group of thinkers who desire this simplification. Proceedings of foreign countries appear in several languages[9] in order to facilitate understanding, and foreigners both abroad and residing in this country immediately support any plan that will make communication easier and agree that the simplification of spelling is an engineering problem and a necessary department of standardization.[10]

Finally, standardization is closely allied to super-standardization, and to the necessity of intensive investigation in specific fields. In Iceland, the professor of psychology before referred to has made intensive study of the local industries, such as haymaking and fishing, especially the complete handling of herring. This fish, which is extensively packed there, furnishes one of the chief industries of the island. An account of this appeared in a German psychological review, indicating interest in such work. The intensive investigators in psycho-technic in Germany require neither description nor evaluation. It is only a matter of time when every field covered by or allied to scientific management will receive the same intensive investigation with equally valuable results, and this method of attack is spreading throughout Europe and throughout Asia, with headquarters there in Japan. It is only necessary to review laboratory investigations in lines of activity parallel to scientific management in Europe and Asia to realize what must take place during the next decade.

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[7] Frank B. Gilbreth and Lillian M. Gilbreth, "Fatigue Study," The Macmillan Co., New York, 1919.

[8] Frank B. Gilbreth and Lillian M. Gilbreth, "Applied Motion Study," Chapter 7, The Macmillan Co., New York, 1919. Frank B. Gilbreth and Lillian M. Gilbreth, "Motion Study for the Handicapped," G. Routledge & Sons, Ltd., London, 1920.

[9] *Annals de l'Institut d'Orientacio Professional.*

[10] "Wealth from Standardization," *Society of Industrial Engineers Bulletin,* September, 1923.

Summary of Present State

To summarize. We see everywhere enormous advances in the promulgation of the principles of scientific management. We find great interest in these advances. We see a growing body of advocates of scientific management—a growing body of teachers and installors. We see a closer affiliation with psychology and economics. We see a development of the technique. We see, in some places, an appreciation of the necessity of the growth of the scientific attitude.

It is important to note that, where the growth is entirely in the spread of the principles and there is a notable lack of growth in the intensive scientific investigation, there is a great variation from the established measured functional management practice, as understood in this country. We have noted this diversity in translations and interpretations. The danger is that unless the scientific side of scientific management is stressed when installations take place, the changes, though apparently slight, will interfere with any complete installation or effective operation of the system. American practice has demonstrated this. We find also that the engineer, under these conditions, is losing his leadership in scientific management—such leadership being undertaken by the psychologist or some allied scientist. Far be it from us to decry the findings or the value of psychology, since we believe that we were the first to call attention to the relationship of psychology to management and to what each could do for the other.[11] But it is obvious that training neither in engineering only, nor in psychology only, fits one adequately to be a manager.

Along with the interest in scientific management developing abroad we find a surprising state of information concerning the subject and a desire to keep pace with the advances. It is doubtful if any prominent European country or progressive country in the Orient can be found as ignorant concerning developments in America as is this country concerning developments abroad—yet it is impossible for engineers in this country to do the best installation without keeping in close touch with advancement abroad. Developments there must form part of the working data of investigators in scientific management and especially of installors, if there are to exist either worth-while research or satisfied clients.

We have noted everywhere the increase of research work abroad, both in the sciences allied to scientific management and in scientific management itself. The only reason why the advances in scientific management are not more noteworthy is because the problems involved are not thoroughly understood.

Recommendations

No reviewers of progress abroad during the last fourteen years have a right to consider their recommendations of enormous or of final value. They can, however, serve as thought detonators.

This country has succeeded in convincing the world that scientific management is a splendid philosophy for industry. No more time or effort is necessary to stress this point. The world is now convinced that management is a science; that it cannot develop adequately unless it is based on careful accurate scientific investigations of the minutest details involved. To stress this is now of paramount importance, but if the countries abroad are to be convinced that management is a science, this country—and especially the engineers of this country—must believe this and support scientific investigations in this field. Half-way measures, opportunism and satisfaction with "good enough" results must be done away with. The necessity of finding the One Best Way to Do Work must be acknowledged. Engineers must, as a body, advocate and undertake intensive investigations in the field of our science, the science of management; in the intelligent handling of materials; in the intelligent handling of men; and in the intensive investigation of the One Best Way to do each operation of each process involved in every industry. This emphasis and insistence on scientific management must be preached and followed unceasingly. If it is not, this country will lose leadership in scientific management. If it is, there is at least a chance that such leadership may be maintained here. But only if it is deserved!

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[11] Lillian M. Gilbreth, "The Psychology of Management," in *"Industrial Management,"* May, 1912, May, 1913; The Macmillan Co., New York, 1914.

News of the Sections

THE New York Southern Tier Section is now holding regular meetings the second Monday of every month. At the May meeting C. E. Killinger, General Manager of the Willys-Morrow Company, presented a very interesting and able discussion of the subject "The Coordination of the Various Divisions of a Manufacturing Organization."

On June 9, Earl G. Brooks of the same company addressed the section on the subject of "Time Study."

The Central New York Section has invited the Southern Tier Section to a joint meeting in Syracuse June 20. Mr. Douglas S. Keogh, Manager of Operations in the Eastern States for Charles E. Bedaux & Co., will speak and the personnel and time study men of member firms will be special guests. This meeting will be the last until fall except for a get-together social afternoon and fish dinner sometime during the summer.

The New York Section, meeting at luncheon May 15 with local sections of the Management Division of the A. S. M. E. and of the S. I. E., was addressed by Dr. Ralph E. Rindfusz on "Interdependence of Production Engineering and Merchandising."

The April meeting of the Cleveland Section was a symposium on "Scientifically Set Sales Quotas." The following executives from some of Cleveland's largest manufacturing companies spoke: Paul Gremb, The American Multigraph Co.; W. R. Sieplein, The Sherwin Williams Company; E. M. Sutherland, The Willard Storage Battery Co.; Joseph Carlton, The White Motor Co.; Harry R. Canfield, The Empire Plow Company; and Loren Morlan, The Joseph & Feiss Co.

William R. Williamson, of Williamson, Tubbs & Co., Chicago, who happened to be in Cleveland that day, contributed to the discussion also and explained his charts for the management of a sales department.

The last meeting of the season for the Cleveland section, May 26, was one of the best both as to attendance and interest. H. S. Person, Managing Director of the Society, talked on "The Potential Growth of a Plant Using Scientific Methods."

"Locating an Office" was the subject of an address before the Chicago Section of the Taylor Society on April 24 at the City Club. The paper was presented by Warren D. Bruner, President, Bruner and Simmons, Inc., and discussed by Lewis B. Ermeling, executive secretary of the National Association of Building Owners and Managers, and by William D. Murphy, office controller of J. Walter Thompson Company, who pointed out how the factors outlined by Mr. Bruner applied to the space selected by his company for its new office in the Wrigley Building.

A special meeting of the section was held at the Old Colony Club, at noon, Saturday, May 19. H. S. Person, Managing Director of the Society, talked on "Recent Developments in Scientific Management" with particular emphasis on the influence on management of present industrial conditions.

The regular meeting, May 15, was addressed by Dr. J. M. Fitzgerald, who for the past thirty-five years has been active in vocational guidance work.

At the special meeting, discussion was opened relative to holding the Spring 1925 national meeting of the Taylor Society in Chicago. The favorable action of this meeting to the plan was ratified at the May 15 meeting and the following promotional committee was appointed: William R. Williamson, Chairman; Warren D. Bruner and Lynn W. Beman.

An Example of Scientific Marketing Procedure[1]

A Yard Stick for Measuring the Buying Public and Advertising Circulation

By STUART COWAN
Cowan, Dempsey & Dengler, Inc., New York[2]

I. Method of Analyzing Buying Groups and Circulation

ALTHOUGH publishers, advertisers and advertising agencies had made numerous test surveys dealing with buying power and magazine circulation, none of these organizations had treated the subject exhaustively, or definitely established the parallel between buying power and circulation. The present paper describes what is probably the initial attempt in that direction. Mr. Groom[3] chose as the basis of his investigation forty-four national magazines having a total circulation in the United States of 25,493,000, and in metropolitan Cincinnati of 154,421.

From the National Bureau of Economic Research exceedingly valuable statistics on income earners and incomes were obtained. Of the 106,000,000 individuals in the United States, representing about 25,000,000 families, 40,000,000 individuals receive incomes—an average of 1.6 earners per family. These 40,000,000 income earners were divided into three groups: Group I, those receiving $2,000 per year or more, 14 per cent of the total number, 40 per cent of the total income; Group II, those receiving from $1,000 to $2,000 per year, 47 per cent of the earners, 42 per cent of the total income; Group III, those earning less than $1,000 per year, 39 per cent of the income receivers, 18 per cent of the total money earned.

Thus, the per capita income is $567; the income per earner in Group I, $4,285; in Group II, $1,340; in Group III, $628. Bear in mind, as previously mentioned, that these figures refer to the income of the individual. While there is an average of 1.6 income earners per family, the number of earners per family is undoubtedly greater in the second group than in the first, and larger in the third group than in the second.

The Cincinnati Survey

Before this investigation was started, a careful study was made which showed that Cincinnati is as nearly typical of the United States as a whole as any metropolitan district. For example, the literate, native white population in the United States amounts to 76 per cent of the total population, and in Cincinnati, to 80 per cent. Moreover, Cincinnati with 185,000 gainfully employed individuals for 106,000 families (these figures refer to the city proper), shows an average of 1.7 earners per family as compared with 1.6 for the entire United States.

Since the income statistics compiled by the National Bureau of Economic Research apply to the United States as a whole and are not sub-divided by states, counties or cities, these income groups cannot be used in any selected territory to determine consumer buying groups or to judge advertising circulation. You can readily appreciate the difficulties which investigators would encounter were they to call at offices and homes and ask, "What is your income?" Presumably, the turnover of investigators would be rather high. Thus, it was necessary to translate income groups into some equivalent, some practical yard stick which could be used conveniently and successfully.

Accordingly, the occupations of the gainfully employed population of Cincinnati were taken as the starting point. The gainfully employed people were divided into three arbitrary groups.

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[1] Part II of a paper presented at a meeting of the Taylor Society, New York, January 25, 1924; Part I, "Tendencies in Sales Management," was published in *Bulletin of the Taylor Society,* Vol. IX, No. 2, April, 1924.

[2] At the time of the presentation of this paper, Mr. Cowan was a member of the J. Walter Thompson organization. The charts which illustrate the paper are used by courtesy of the J. Walter Thompson Company.

[3] The general survey of buying groups and circulations was planned and executed by Mr. William Groom, Manager, Cincinnati office, J. Walter Thompson Company. The application of this study to the automobile industry was conceived and carried out by Mr. Cowan.

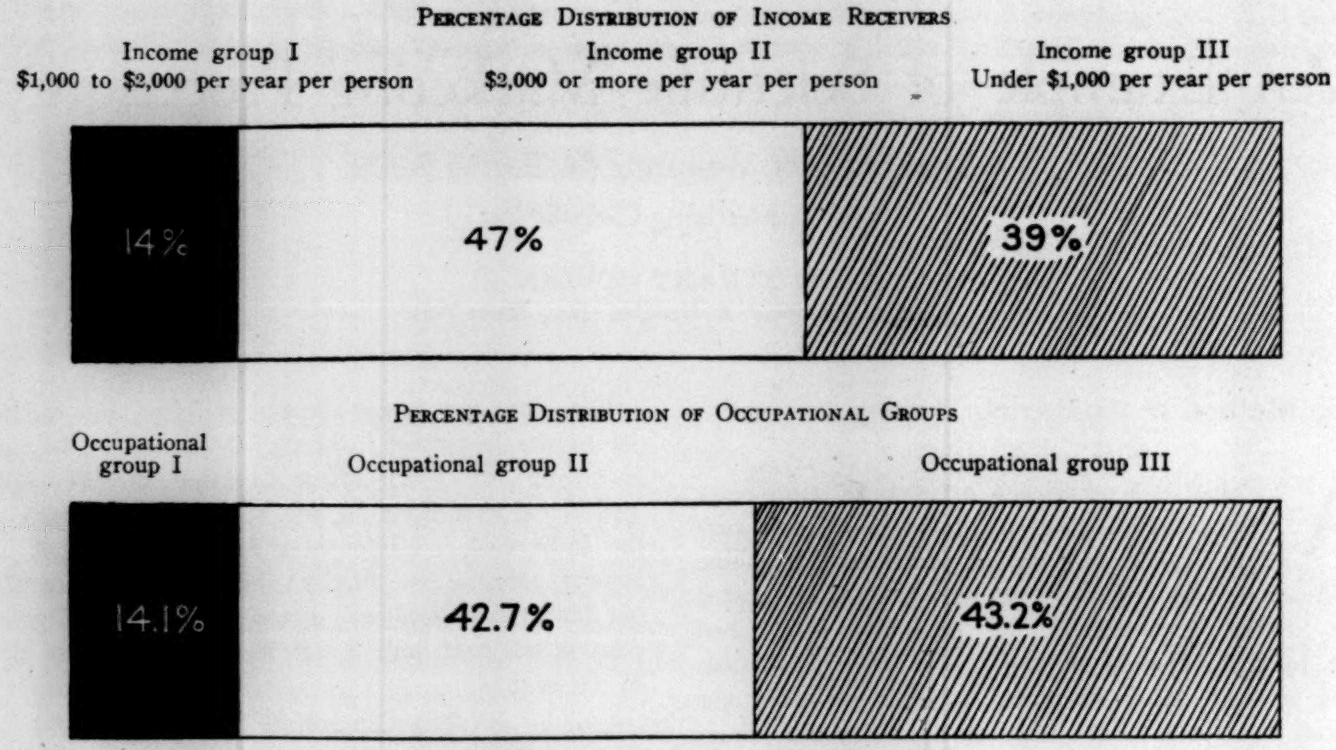


Figure 1. Comparison Between Income Groups in the United States and Occupational Groups in Cincinnati

In the first group were included those occupations which call for a higher order of intelligence, education and personality, and which presumably pay a larger compensation. This group includes:

Occupation	Percentage of Earners
Business executives	2.6
Professional men	5.9
Retailers and tradesmen other than department store and jobbing house executives	4.5
Salesmen (traveling or city), excluding retail clerks	1.1
Total Group I	14.1

In Group II were included those earners who logically fall below Group I, but above the lower order of earners:

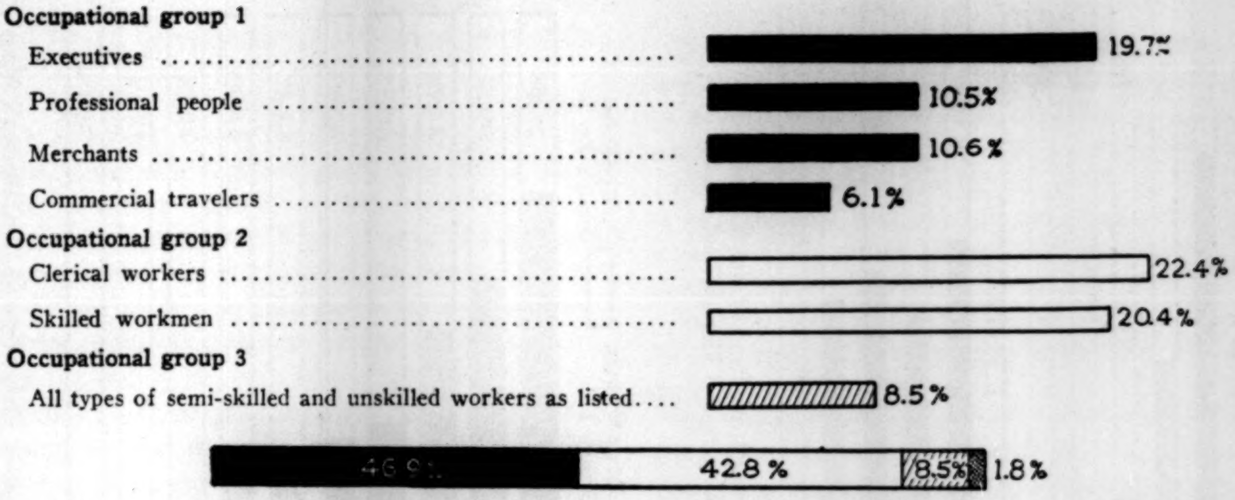
Occupation	Percentage of Earners
Clerical Workers	20.1
Skilled Workers	22.6
Total Group II	42.7

While it is true that skilled workmen frequently receive better pay than clerical workers, it did not appear that either skilled workmen or clerical employees should displace any of the four classes in Group I.

In Group III were included all unskilled and semiskilled laborers, and all miscellaneous employees, totaling 43.2 per cent of the total earners.

Comparing Occupational and Income Groups

Figure 1 shows the comparison of these three occupational groups with the three income groups. You will notice that the agreement is quite close. Whenever this survey has been presented to businessmen, questions have been raised as to the agreement between the income groups and the occupational groups. On the whole, there is probably a considerable degree of harmony between the two groups. There are, of course, young doctors, young lawyers and retailers whose incomes are less than $2,000 a year and who belong in the second income group, although placed in the first occupational group. Likewise, there are clerical employees and skilled workmen earning more than $2,000 a year. Bear in mind, however, that the annual earnings of a skilled workman may be exaggerated by the publicity given to his daily rate; in the building trades, for example, there are many skilled workmen who are employed for only one hundred and fifty to two hundred days a year, and this lack of steady employment, a problem confronting thousands of skilled workmen, means a material reduction in



Total percentages for each occupational group

Figure 2. Subscription Circulation of 44 National Magazines in Metropolitan Cincinnati by Occupational Groups
Based on actual checking of 79,000 names and addresses

annual income. Bear in mind as well that while some skilled workmen, such as those engaged in the building trades in a city like Chicago, may earn $20 to $30 a day, these conditions are not typical of the country as a whole and particularly do not apply to the smaller cities and towns. All things considered, the crossovers from Group II into Group I and the crossovers from Group I into Group II must approximately offset each other, for the income groups as worked out by the National Bureau of Economic Research are very accurate.

The important point, however, is this: that since the occupational groups are used as a yard stick to measure both the consumer market for a given product and the characteristics of advertising circulation, the lack of perfect agreement does not lessen the value of this survey.

Analysis of Magazine Circulation

Having established this yard stick and having obtained from the publishers of these forty-four magazines the names and addresses of their subscribers, the investigators proceeded to identify these subscribers by obtaining from the city directory and other sources the nature of the occupation of each. The summary of these findings is as follows:

Total population, metropolitan Cincinnati	537,000
Total number families, metropolitan Cincinnati	141,000
Total circulation of 44 magazines	155,000
Subscription circulation	79,000
Newsstand circulation	76,000
Average magazines per family	1.1
Circulation addressed to men	30%
Circulation addressed to women	69%
Circulation addressed to married women	50%
Circulation addressed to single women	19%
Circulation addressed to institutions	1%

The total of 155,000 circulation was constituted as follows:

6 women's magazines (first division)	52,000	(34%)
4 women's magazines (second division)	12,000	(8%)
3 leading weeklies	31,000	(20%)
5 leading monthlies (fiction and general)	33,000	(21%)
15 class publications	9,000	(6%)
11 other magazines	18,000	(12%)

Figure 2 gives the distribution of the subscription circulation of these forty-four magazines according to occupational groups. You will notice that Group I, 14 per cent of the earners, constitutes 47 per cent of the circulation; Group II, with 43 per cent of the earners, about 43 per cent of the circulation; Group III, also about 43 per cent of the earners, only 8.5 per cent of the circulation.

The piling up of magazine circulation in Group I is particularly interesting. The total circulation in Group I, 72,000, is almost three times the total number of income earners in Group I, 26,235, and nearly five times the number of families, 14,980.

In Group II, we have 66,000 circulation compared with 79,106 earners and 45,364 families.

In Group III there was 13,000 circulation compared with 79,967 earners and 45,895 families. In these

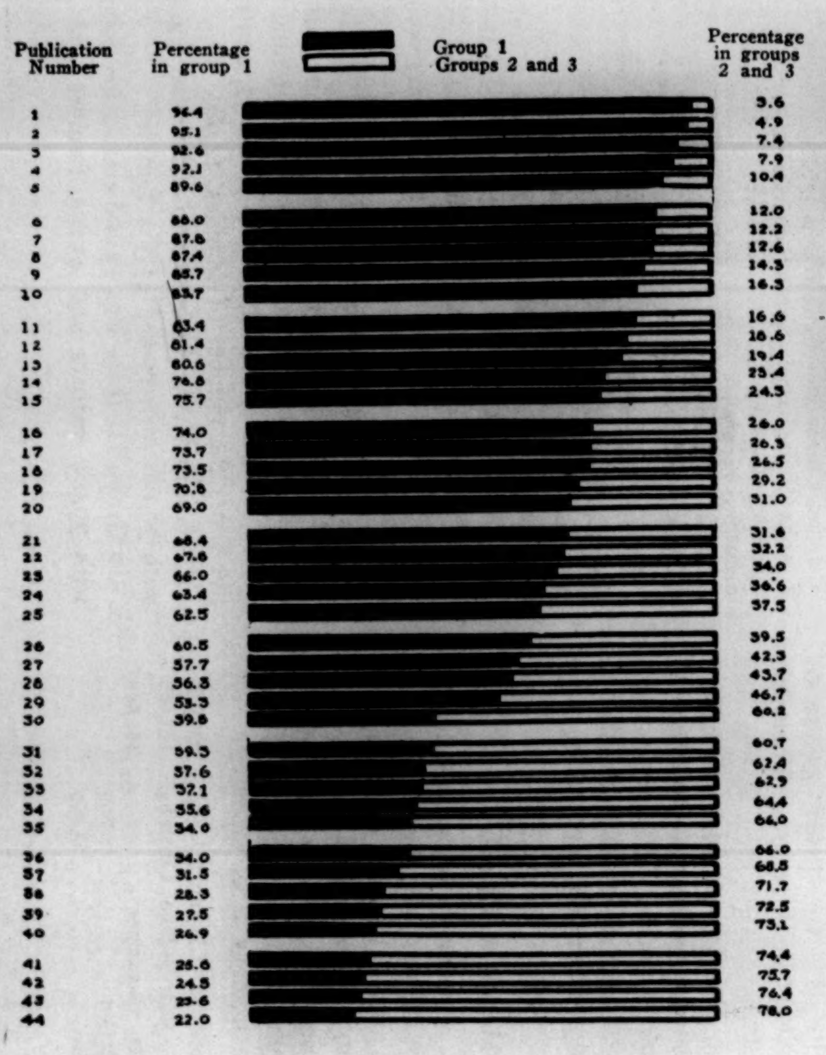


Figure 3. Subscription Circulation of 44 Magazines in Metropolitan Cincinnati by Occupational Groups.

Note. The percentages in these three charts cover subscription circulation in occupational groups only; circulation among libraries, clubs, etc., is not included.

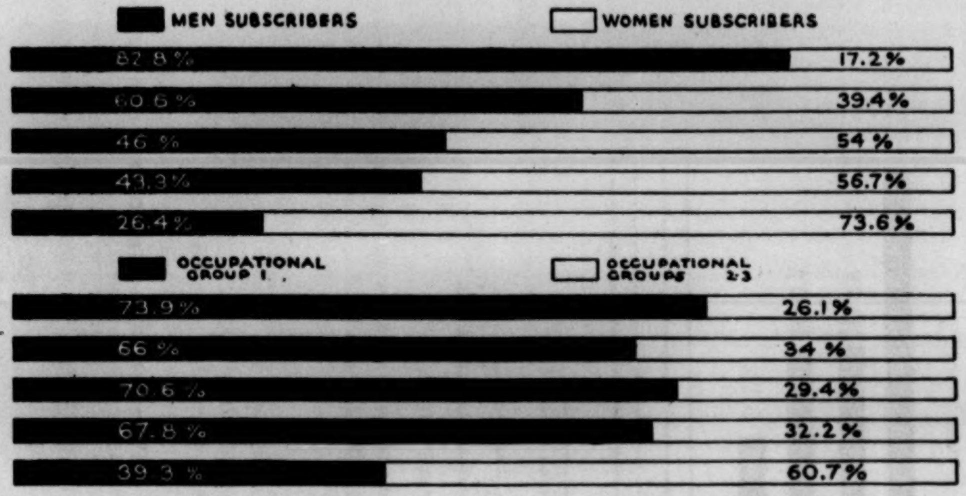


Figure 4. Subscription Circulation of Five General Magazines in Metropolitan Cincinnati, by Sex and Occupational Groups.

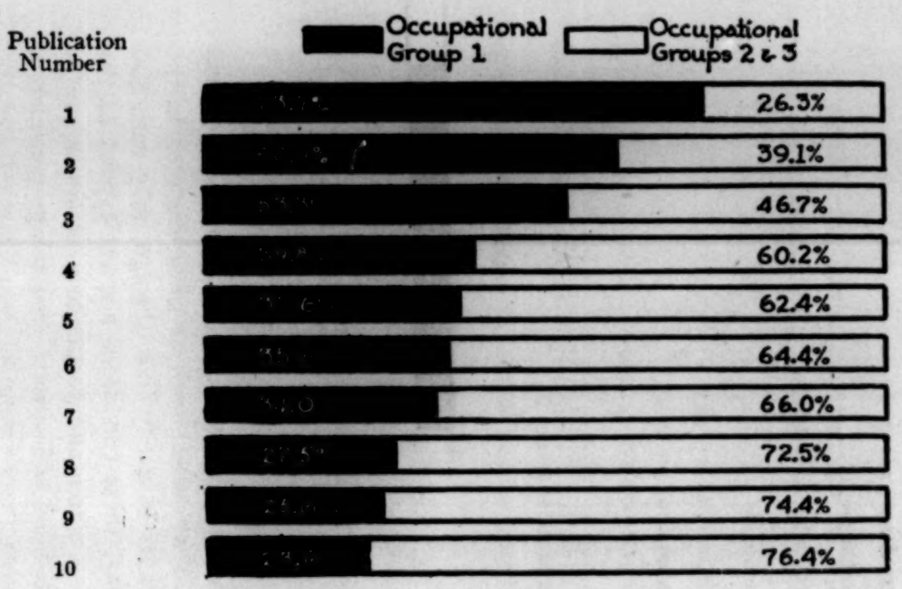


Figure 5. Subscription Circulation of Ten Women's Magazines in Metropolitan Cincinnati, by Occupational Groups.

calculations, the average of 1.7 earners per family was used for all three groups, although as previously mentioned, this is not strictly accurate.

These figures raised the question of comparing magazine coverage versus newspaper coverage. As you know, Cincinnati is a one-paper city on Sunday. Since the Cincinnati "Enquirer" has a circulation of 104,454 in the city proper, 98 per cent of the 106,000 Cincinnati families are reached by the Sunday paper. Thus it would seem that this paper reaches perhaps 99 per cent of the families in Group I; 97 per cent in Group II; and 95 per cent of the families in Group III, covering all three groups thoroughly. That condition suggests the importance of selecting circulation to cover those occupational groups which represent the market for a given product.

Circulation by Occupational Groups

Perhaps the exhibit of most general interest is Figure 3, showing the percentage of identified circulation of each publication according to occupational groups. Following the black bars, you will see that publication number 1 has 96.4 per cent. in Group I, while publication number 24 has 22 per cent. Figure 4 is of interest in this connection; it deals with five general magazines and shows the analysis according to men and women, and also according to occupational groups. Figure 5 shows the analysis of ten women's magazines according to occupational groups.

With this fund of information at hand, Mr. Groom cast aside the customary or traditional classifications of magazines and created five new classifications according to the percentage of circulation to men and the percentage to women. Then, each of these five classifications was sub-divided according to occupational groups, thus establishing a new standard for judging circulations.

The question of duplication was studied intensively by actually checking 114,000 names and addresses. The figures on duplication between the subscription circulations of various pairs of publications is very accurate; to allow for the newsstand circulation an algebraic formula worked out by a competent mathematician was used. As suggested by Figure 3, and the reference to the piling up of circulation in Group I, the largest amount of duplication occurred there. With the exception of one pair of magazines, the duplication in Group II was considerably less than in Group I, and in Group III considerably less than in Group II.

II. Practical Applications

With these facts at hand, it seems that a rather new principle may be employed in the development of advertising plans. The application of this new principle involves two steps:

First, to measure the buying public for a product by occupational and sex groups, and determine the proportion of actual buyers and prospective buyers in each of these groups.

Second, to choose advertising circulation so that the coverage will harmonize with that analysis of the consumer market.

An interesting example of the application of this principle is the study made of the market for popular-priced automobiles selling between $800 and $1,100. This investigation covered twelve cities, as follows: Boston, Providence, New York, Philadelphia, Buffalo, Cleveland, Cincinnati, Chicago, Milwaukee, St. Louis, Kansas City and Omaha. Two thousand sixty purchasers were actually identified. Figures 6 and 7 show, in chart form, the findings which resulted.

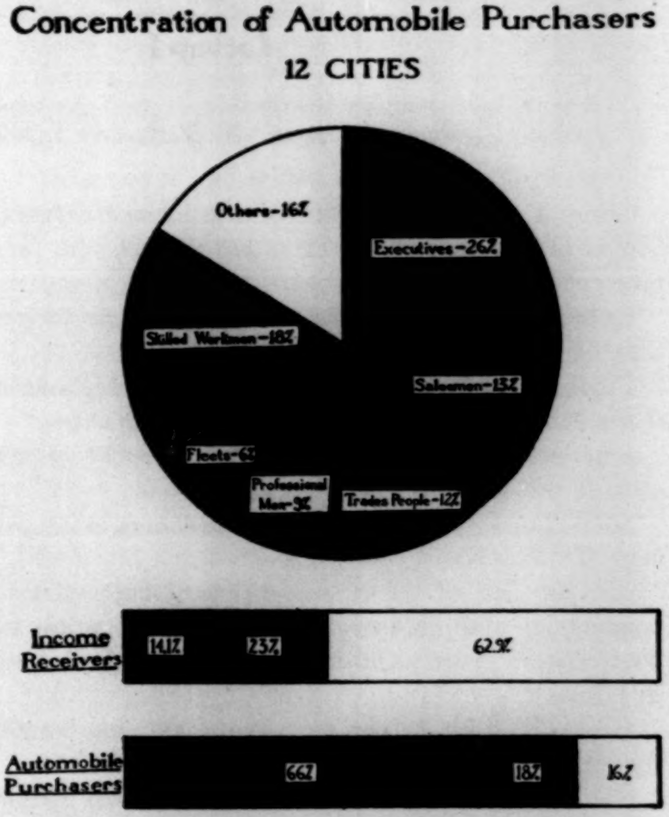


Figure 6. Classification of Automobile Purchasers by Occupational Groups.

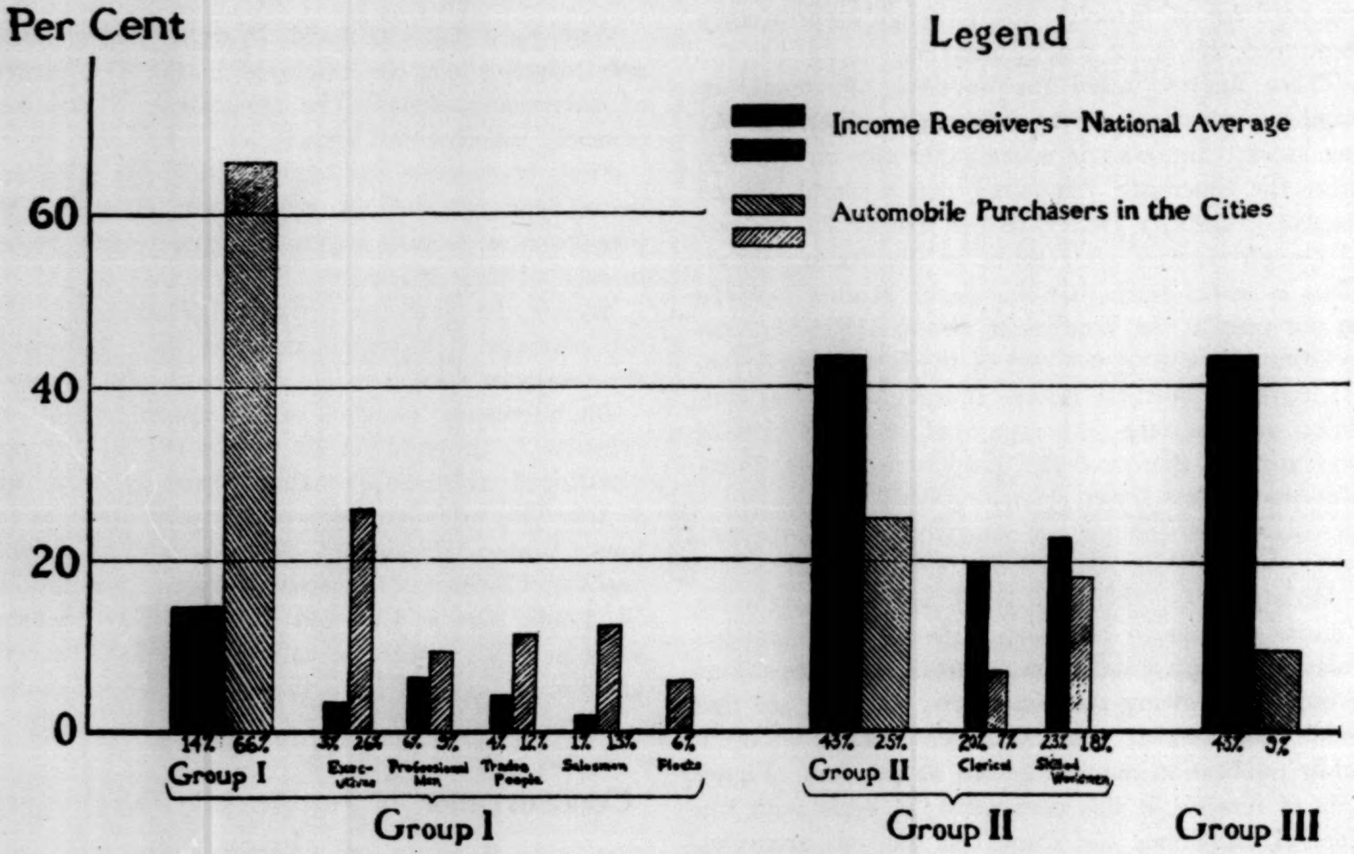


Figure 7. Percentage Distribution of 2060 Automobile Purchasers in 12 Cities (Summer 1923) by Occupational Groups Compared with Percentage Distribution of Income Receivers in the United States.

Group I, with 14 per cent of the income earners, bought 66 per cent of the cars, and this may be further subdivided as follows:

Executives, 3 per cent of the earners, bought 26 per cent of the cars.

Professional men, 6 per cent of the earners, bought 9 per cent of the cars.

Retailers, 4 per cent of the earners, bought 12 per cent of the cars.

Salesmen, 1 per cent of the earners, bought 13 per cent of the cars.

Six per cent of the cars represented fleet sales to commercial and industrial buyers. These sales, of course, were made to business executives who belong in Group I.

Group II, with 43 per cent of the earners, bought 25 per cent of the cars.

Clerical workers, 20 per cent of the earners, bought 7 per cent of the cars.

Skilled workers, 23 per cent of the earners, bought 18 per cent of the cars.

The high purchasing power of the skilled workman is particularly interesting. It would seem that the "white collar" man must not only receive less money, but must also find it necessary to maintain a certain standard of living which makes it more difficult for him to purchase and operate an automobile. Presumably the wives of such men consider it necessary to dress up to a certain standard. Doubtless they feel the need of living in more favorable surroundings, and presumably there are other demands on their funds to maintain a certain prestige or atmosphere—all tending to limit their buying power for automobiles. The skilled workman on the other hand receives good pay and does not find it necessary to maintain the same social standards as the clerical worker. As a group, the skilled workmen, therefore, have almost two and a half times as much buying power for automobiles of this class as the men who wear white collars.

Group III, with 43 per cent of the earners, bought only 9 per cent of the cars.

You might be interested in the variation between the different cities as regards the percentage of sales made to each of the three groups.

	Percentage of Buyers in		
City	*Group I*	*Group II*	*Group III*
Boston	52	38	10
Providence	62	31	7
New York	87	10	3
Philadelphia	75	21	4
Buffalo	57	32	11
Cleveland	76	18	6
Cincinnati	70	24	6
Chicago	55	29	15
Milwaukee	70	20	10
St. Louis	81	14	5
Kansas City	73	25	2
Omaha	89	9	2

Thus you see an application of step one, the analysis of the buying public for a product in terms of occupational groups.

Appraisal of Magazine Coverage

Step two, the appraisal of magazine coverage, is of equal interest. The analysis of the combined circulation used for the advertising of this automobile showed occupational distribution as follows:

Group I		4,167,852 (63%)
Executive	1,907,750 (29%)	
Professional	1,032,325 (16%)	
Trades people	826,368 (12%)	
Salesmen	401,409 (6%)	
Group II		2,152,819 (33%)
Clerical Workers	1,338,038 (20%)	
Skilled workers	814,781 (13%)	
Group III		285,011 (4%)
Total circulation to individuals		6,605,682 (100%)
Institutions		205,619
Total circulation		6,811,301

You will notice that Group I is well covered, with the possible exception of the salesmen. The coverage of Group II, on a percentage basis, is good as regards clerical workers but low as regards skilled workmen. Group III is obviously unimportant.

But it is a mistake to consider merely percentages. A manufacturer selling a product figures his profits on the number of units sold. Quantity is the thing which interests him. In Group I, we have, let us say, 3,500,000 families. The corresponding circulation totals over 4,000,000. With reasonable allowance for duplication, this would seem to show that he is covering Group I quite effectively. Group II, on the other hand, represents almost 11,000,000 families and the total circulation to this group is only slightly in excess of 2,000,000. This condition is even more pronounced with respect to skilled workmen; there are about five and a half million families in this group, and yet the circulation to this group is less than a million.

Fitting Advertising to the Market

That case may be of value if it directs your attention to a study of the thoroughness with which your advertising covers the market for your product and leads to an analysis of the character of different advertising circulations, so that the sales story represented by your advertising copy may be carried before the audience you want to reach. A thorough discussion of all the factors involved would carry us into many technical aspects of markets and circulations and is obviously beyond the scope of a paper such as this.

While comparatively few manufacturers can afford to place their sales story before all their possible buyers, and while it would be a mistake to recommend that every manufacturer endeavor to do this, the fact remains that many business men, if they could only visualize clearly the conditions confronting them and the limitations of their efforts, would devise ways and means of using advertising or mass selling on a more adequate basis.

No sales manager would speak of national distribution if he had covered only parts of a dozen states scattered over the country. Yet business men sometimes speak of national advertising when their advertising is thinly scattered over the nation without approximating a thorough coverage of the prospective buyers.

The automobile case also raises the question of supporting magazine advertising with other mediums, such as newspapers, painted signs, billboards and direct mail and with intensive follow-up methods, such as the telephone and personal calls.

While magazine advertising has grown from about $30,000,000 in 1914 to about $120,000,000 at the present time, the use of newspaper space by general advertisers has grown at a rate which is fully as rapid. An enormous increase in outdoor advertising and direct mail advertising has also come about during the past few years. This indicates a trend toward a more thorough coverage of the prospective buyers.

The Local Dealer's Interest

A scientific appraisal of the market and the scientific selection of methods of reaching it involve the local distributer or dealer as well as the manufacturer. The distributer for a popular-priced automobile in one of the large cities reported a loss exceeding $30,000 on an intensive sales and advertising campaign which was unscientifically planned and expensively conducted. An authority in this field when reviewing the report which you have just read immediately put his finger on the weak spot, namely, that a great amount of time, energy and money had been wasted on unfertile fields; had the campaign been directed toward the most fertile buying groups, it would in all probability have turned out profitably. A similar waste was checked up in another city and the analysis showed the same weakness. To illustrate: since salesmen are 1 per cent of the earners and buy 13 per cent of the cars, it is obvious that they represent a very fertile field for direct mail work and personal follow-up. Similarly, since executives, 3 per cent of the earners, purchase 26 per cent of the cars, they, too, represent a very fertile field. So it is clear that careful study and sound planning along these lines can be of value to the local dealer or distributer.

One other point should be mentioned in this connection: many manufacturers are constantly confronted with the difficulty of obtaining satisfactory cooperation from retail dealers. This applies not only to the manufacturers of food and drug articles selling at comparatively low prices, but to manufacturers of vacuum cleaners, washing machines, clothing, pianos, automobiles, etc. If you will put yourself in the dealer's position—running a retail business in a certain community, surrounded by several hundred or several thousand homes—and study the problem from his point of view, you may obtain new light on the question of dealer cooperation.

If the advertising is reaching only one out of six or one out of three buyers in that particular community, the effect on that dealer may not be enough to make him warm up to your product. And that may explain his failure to cooperate. On the other hand, if you are covering the prospects in his particular community with sufficient thoroughness and regularity, you may create a condition which will awaken his interest and give him the desire to cooperate. For example: it would cost a fortune to pay newsboys to put a certain magazine out in the front pile or to pay the retail grocer to pile the packages of a certain product in the front of his store; yet if enough people ask for that magazine or ask for that food product, the newsboy or the grocer will put it out where he can reach it quickly. Thus, the manufacturer obtains automatically what he could never obtain by direct effort or only at a prohibitive cost. In every business there is a critical point which must be passed before dealer cooperation starts to come automatically. When that point is passed by a safe margin, cooperation, whether it be window display or counter display or local advertising by the dealer, or better salesmanship by the clerk, starts to grow and grows in a cumulative manner.

An Application to the Marketing of Breakfast Food

Another interesting application of the Cincinnati survey is a case dealing with the marketing of a breakfast food. This survey covered about 600 families, 120 in Group I, 240 in Group II and 240 in Group III. The findings established the per family consumption in each of the three groups and showed that the total market was divided as follows:

Group I, 29 per cent of total consumption.
Group II, 50 per cent of total consumption.
Group III, 21 per cent of total consumption.

An analysis of the magazine circulation used by this company showed that Group I was thoroughly covered, whereas in the case of Group II, which represented 50 per cent of the consumption, only half of the families were covered by the circulation, and in Group III, representing 21 per cent of the market, only one family in ten was covered.

Studies of occupational buying groups and the coordination of advertising circulation with these groups is rather costly as applied to an individual business. It requires time, tireless effort, expense. It cannot be done carelessly or superficially. Work so done is a waste. Rightly done, it is one of the most productive investments a business can make. Not only does it bring results in new methods of planning; it brings also indirect benefits of perhaps even greater value. It stimulates clear thinking right through the organization.

By developing a more scientific viewpoint toward marketing, it gives a new definiteness to a problem which at best is rather intangible. It helps to make advertising more concrete to the salesmen and to the trade; a salesman who gets lost in the maze of copy and art matters can see his way through facts of this kind; he can study his campaign, its effect in his city and towns, its value to one particular dealer, as easily as he visualizes the towns on his route sheet; thus, he sees that national advertising is really local advertising. This effect on the salesman is in itself an important result of such work.

Another by-product may be the handling of distribution in accordance with the market for the product among different buying groups. A product which has 75 per cent of its market in Group I and 25 per cent of its market in Group II is a logical product for the dealers who get the trade of those groups. While there may be 50,000 possible outlets for a certain product, the facts may show that 15,000 outlets will make this product available to 90 per cent of the possible consumers. Thus, in building distribution, this new viewpoint can be of direct help.

Balance the cost of this type of work against the possible benefits which may be obtained, and the total investment in advertising. I think you will agree that, judged as insurance as well as a direct source of better planning, it is worth careful consideration.

Prague International Management Congress

(*Continued from page* 100)

Discussions of these same subjects and allied topics have been prepared by leading Czech speakers. For example, the opening paper on The Nature, Achievements and Tendencies of Scientific Management will be discussed by Mr. Spacek, State Engineer; Individual Relations in Industry, by Dr. Forster, Chief of the Psycho-Technic Section of the Masaryk Academy, Labor Relations, by Congressman Modracek; Education for the Profession of Engineering, by Dr. Klir, Ex-president of the Masaryk Academy, and Mr. List, Electro-Technical Engineer. Elimination of Waste, Standardization and Simplification will be discussed by representatives of the Czechoslovak Normalization Society.

Up to May 31, two hundred registrations from Czechoslovakia had been received by the Committee in Prague.

The Committee of the Second Congress of Scientific Organization extends a cordial invitation to all members of the Taylor Society who expect to be in France this summer to attend the Congress to be held in Paris, June 26 to 28.

The program includes discussion of such subjects as The Human Factor, Public Service, Sales Organization, Financial Organization, Control and Execution, and Household Work.

Student Branches

The student branch of the Taylor Society at the Harvard Graduate School of Business Administration was organized by Donald P. Braley on November 25, 1923. On February 19th, 1924, the following officers were elected for the coming year: Hildjing F. C. Hanson, President; John C. Bancroft, Treasurer; Rodney G. Bell, Secretary.

At the present time there are thirty-six members, the majority of whom are second year students concentrating in Industrial Management.

There have been four meetings to date. At the first meeting H. S. Person spoke. At the second Philip F. Moen of the New England Butt Company spoke on "Nine Years of Taylor Management." On March 20 Frank B. Gilbreth spoke on "Selecting the One Best Way to Do Work," and on May 15 W. L. Walker of the Washburn Co. spoke on "Experiences with the Taylor System."

Students of New York University organized a student branch this spring with the following officers: President, Timothy Kuryla; Vice President, Alan T. Hudson; Secretary, C. Lawrence Starr; and Treasurer, Francis X. Redmond.

The activities included a trip through the plant of McGraw-Hill Company April 26 and a talk by H. S. Person, the evening of May 2.

Reviews

Industrial Management, by Richard H. Lansburgh, John Wiley & Sons, Inc., New York, 1923, pp. 488.

Mr. Lansburgh's book is a text book primarily intended for students of management, although it contains valuable contributions to the literature of management which would be worth the reading of any business executive. The book covers the entire field of management, giving the general principles applying to the job of management with many illustrations and examples of methods which are commonly used in carrying out these principles. As might be expected in a book endeavoring to cover the whole field of management, some things have been omitted, but this review is undertaken not with the idea of enumerating those things which might have been discussed but rather to call attention to what has been developed.

In general, it may be said that the book deals with those matters pertaining to the larger phases of management, such as the principles of organization and the meaning and value of standardization, and then confines itself primarily to the physical operation of the plant as it is concerned mainly with the job of producing.

Like most writers on management, Mr. Lansburgh has introduced his subject through the historical approach but has done it exceedingly well. In making this introduction he has established the interdependence of one industry upon another and has developed the idea of the managing group as a force in industry to take its place alongside capital and labor. He then treats of plant organization, the physical side of the plant, standardization, job study, wage payment, personnel relations and controlling operations, each of these subjects occupying a section composed of several chapters.

In Part Two dealing with plant organization, the fundamentals of organization have been well set up. There probably will be some disagreement with some of Lansburgh's conclusions as, for instance, his recommendation to have the inspection department under separate control from the producing unit where quality must be a first essential of manufacturing. There have been so many instances of successful manufacturing where the administrative force has made it a part of the foreman's job to consider quality as well as quantity that it would seem wise to urge the placing of responsibility for all phases of a man's job upon him if possible.

Lansburgh has done well to call attention to many errors of organization building which are commonly made as the result of trying to obtain a too high degree of organization. The chapter which has to do with morale-building vs. morale-destroying organization contains excellent advice which many executives would do well to heed. He points out the dangers of the restrictions of individuals and shows how overorganization is often likely to deaden the individual's initiative. The necessity for proper balance—avoiding too many supervisors, a too fine division of responsibilities and an overreliance on organization charts—is made very evident. Also, he has shown a correct understanding of the meaning of overhead charges by his statement that high rate of burden is not necessarily bad in itself but should be scanned in the light of its savings in the cost of production rather than as to the amount itself. In other words, if the total unit cost is decreased as a result of adding to the indirect charges, this should be the basis of judgment as to the usefulness of the mechanism or method concerned.

In Part Three dealing with the physical side of the plant, Lansburgh has gone further than most authors by pointing out certain influences and advantages pertaining to location not ordinarily given in the standard discussion of plant location. His chapter on plant layout covers a general layout rather than machine or process and he points out dangers to be avoided. The other chapters in this section give in somewhat detailed form the factors to be considered in lighting and air conditioning, pointing out the general effects upon workers and production. The chapter on power enters into some discussion of the methods of measuring the economy of power units, particularly with reference to central power vs. isolated plant power.

Part Four is described as standardization (a primary management step). Although it may be argued that the whole job of management is concerned constantly with various problems of standardization, it probably is worth while, nevertheless, to call attention to this factor as a main element in good management. In the matter of product standardization, Lansburgh calls attention to the sales department which has in recent years received much publicity as to its responsibility for a large diversity of products, as evidence of poor sales policies. He might well have emphasized the value of parts standardization as a basis for interchangeable manufacturing, as this is a source of great economy in all standardized manufacturing. Under standards of operation, he calls attention to the desirability of standardizing materials, equipment and machines. He advocates a strong inspection department and shows how the control of this may vary according to the organization and the emphasis which must be put upon quality. Again we may quarrel with his conclusions; yet we must agree that proper inspection is necessary if we are to have efficient manufacturing, particularly in the assembling industries.

The chapter dealing with standard nomenclature is most excellent. The author points out the advantages and disadvantages of various kinds of symbolization and in his development of the mnemonic system which he recommends as the best, he links up in a very understanding way the organization, materials, accounts and production, and indicates how such a system is of advantage in the control of stores and accounting. He might well have emphasized the advantage of a proper system of symbols to the organization in budgeting and its financial control of inventories.

Part Five covers job study. It contains a general consideration of the reasons for job study together with a brief summary of the advantages and methods of motion study, time study, and some suggestions as to how these may be made and computed. The author emphasizes the necessity of exact knowledge in the determination of the job rather than the building up of standards based on past experience of either supervisors or workers themselves. He calls attention to the recognized merit of job study as well as to the comparatively little use that is made of it, even by executives who recognize its worth. We all must agree with him that job study has two motives: first, to improve methods of manufacturing; and second, to form a basis of rate setting; and that the first may be undertaken without the necessity of employing the second purpose. His chapters on methods of making and computing time studies are good reading for students who find more technical works such as Merrick's "Time Study" a little too difficult for a moderate understanding of the subject.

Parts Six and Seven are discussions of wage payments and personnel relations. The author does not hesitate to declare that wages are the basis of all other relations between employer and employee. A just basic wage, he believes, should be the starting point of a proper wage system and it should be dependent upon cost of living, the man's productive capacity, and the general community level of wages. With regard to incentive wages he says: "Schemes can be devised which will prove entirely satisfactory to the worker but which will in time be eliminated by those controlling the enterprise because they will not be flexible enough to permit the meeting of increasing sales competition. Thus any wage scheme which gives the worker a percentage of the savings incident to increased production and yet prohibits innovations in manufacturing method or inclines to make the worker peg his production merely at a somewhat higher point than formerly, due to fear of ultimate wage-cutting, will not be beneficial for long." This is perhaps a new emphasis to be placed on wage consideration, and yet, a very essential point.

A proper personnel policy is built up on the basis of a proper morale among the workers. With this there will be little disagreement. This matter of policy, Lansburgh feels, should be covered by the personnel department. The employment department's job is to reduce turnover and he suggests certain means, most of which are now commonplace, such as the use of selection tests, both mental and physical, and the proper kind of interviews, types of service work, and so forth. Employee participation, he defines as an attempt on the part of management to instill into its employees a feeling of private ownership and shows the ways in which this is ordinarily undertaken, either by a financial appeal such as a share in the profits or stock ownership, or by an appeal to interest in participating in the affairs of the organization through some type of works councils or committee form of organization. He forecasts the greater development of trade agreements only in those industries which are strongly organized. Although he makes no recommendation as to the use of these various contrivances to secure better personnel relations, the following opinion certainly seems sound: "The individual plant, in most industries, which maintains the confidence of its employees, and particularly, which makes the wages and conditions of work equal to or better than the union standard, will probably continue to operate smoothly and in successful relationship to its employees without the use of trade agreements, or even without the development of any form of works council, except possibly a very loose committee organization."

The last section of the book, comprising a little over a hundred pages or one quarter of the book, has to do with the development of certain principles, amply illustrated by examples of methods used in controlling operations. His development of budgeting for administrative control, being brief, is necessarily rather general, but indicates those things which budgeting control should strive for. Under the control of inventories he expresses the desirability of proper control and enters into a discussion of maximum and minimum quantities and detailed operation of a balance sheet. He also takes up the physical basis for control in discussion of the location and layout of the stores department, types of bins and auxiliary equipment, together with the details of storeroom operation. His discussion of the place of the purchasing agent in the organization takes into consideration the different requirements of the job according to the industry in which he is located, and the part which he may play in inventory control. He also gives a brief summary of the purchasing agent's job.

His discussion of the control of sales has to do largely with the importance of sales analysis and planning, the determination of sales quotas and special factors that have to be considered. He does well to point out the foolhardiness of allowing distributing agents to dictate the manufacturing policies to the main organization.

His development of production control is most sound and practical. The first step which he recommends in an organization free from the use of planning methods is the development of a simple production department which has to do chiefly with the controlling of orders, answering such questions as "when" and the order in which work shall be done, and concerning itself largely with the elimination of delays. This he feels should lead to the later development of a planning department. He does well to call attention to the confusion which exists between the planning department and the production department since the latter term is often used to indicate the former. He makes an excellent analysis of the functions of the planning department and undoubtedly expresses the general conviction of most of us that the tendency is away from strongly centralized control to more decentralized operation. He develops routing, scheduling and dispatching as the main functions of planning, shows the scope of each and gives many illustrations and samples of mechanisms and forms, draws attention to the Gantt chart as an excellent means of routing and scheduling, and gives rather an elaborate discussion of the use of planning boards. In his chapter on the adaptation of production planning methods he suggests the uselessness of trying to obtain 100 per cent planning control, and the adaptation of older methods as it seems advisable. He refers to costs as one of the means of management control—"the yardstick of the management of performance." He also points out that the cost system should be so related to the organization that it will show the responsibility of each department for its part in manufacturing, through a record of its own costs.

"Industrial Management" is a worth-while addition to the literature on management and of particular interest to those who wish a summary of the principles and methods of management. It is readable, thoroughly understandable, and the illustrations are well chosen. The ideal is well tempered by the practical and even though in many instances the author has refrained from stating convictions or conclusions he has indicated the facts so that one is usually well able to draw wise conclusions for himself.

N. G. Burleigh[1]

The Handbook of Sales Management. By S. Ronald Hall, McGraw-Hill Book Company, Inc., New York, 1924, pp. ix, 995.

In the introduction of S. Roland Hall's "The Handbook of Sales Management" we are told that the author and the publishers came to the conclusion, before a page of this book was written, that the demand today is for a volume that not merely defines sound principles of salesmanship and salesmanagement but reviews how these principles have been applied and what the results of the experiences of hundreds of successful sales organizations have been.

There is growing conviction that modern business is beginning to sense the imperative necessity for a scientific organization of all selling effort. Business organization is motivated by the idea of constantly increased sales at a profit. To make sales and to earn satisfactory dividends has come to mean that selling administration has selected wise business policies backed by an efficient sales organization.

S. Roland Hall in this his newest book senses the fact that a new technique of selling is in the making. Hence, he proceeds to marshall experience after experience to show what fundamental principles are at work.

Authors of books whose effort is to compile the experiences of manifold business concerns under given classifications represent a certain type of evolutionary thinking in relation to the development of the subject which they represent. Their books envisage concrete after concrete example in an effort to search for an underlying principle or an economic theory explanatory of the question at issue. The fact of the manifold presentation of examples indicates a search after greater light in justification of the issue in question. From a student point of view this method of presentation seems to many of us unsatisfactory. It means that the author is himself searching for a larger comprehension of the economic laws pertaining to the questions at issue. He is—if you please—assimilating the points at issue in an effort to establish fundamental economic laws in relation to future practice. It is a concrete method of presentation which often confuses as much as it enlightens. It is suggestive of the truth to come, but it does not establish right principles for immediate action.

That we may see the limitations of this method of presentation, let me cite the typical method of developing the thought at issue under the caption "Advertising Appropriations and Budgets." Let us analyze the appropriation discussion. "A vote taken some years ago among large advertisers showed that 50 per cent of national concerns base their advertising appropriation on sales, taking the previous year's total in calculating the proportion.

"A review of the expenditures of nearly one hundred advertisers showed the largest number ranging from 2 per cent to 10 per cent, the average falling between 5 per cent and 6 per cent. These concerns were all manufacturers or large scale agencies such as importers or jobbers.

"In studying these figures it was observed that the percentages for different years varied greatly. The percentage in one case for a period of nine to 10 years might be 3 to 4 per cent of the amount of gross sales, whereas the percentage in one year might run as high as 10 per cent."

Mr. Hall has dealt in generalities and has given us no deep and fundamental laws or principles based upon the law of average broad enough to be dependable.

Moreover, there is no discussion of the scientific aspects based upon thoroughly established psychological factors. A thorough understanding of crowd psychology and its established concepts is an indispensable part of the discussion of any advertising appropriation. Any other effort to get at its solution is inadequate. Just as physics and chemistry have unlocked the door to a large scale production so the fundamental concepts of the humanistic sciences are the determining factors in establishing the costs of human appeal. Of course the economic aspect of profit is ever in mind. It is the intangible factor of human behavior which so many practical men are wont to call theory. But the march of progress goes on, and increasingly it is coming to pass that the technique of science in relation to merchandising is becoming the basis of advertising values.

These values have been fundamentally worked out in the laboratory. The field research is to be characterized as merchandising. If advertising is to be effective it is to be effective in relation to the structure of the human mind in relation to the message to be got over. If we are to take chances as to method in getting at principles for future advertising policy, the truth would logically seem to lie in the direction of the humanistic and economic expert in relation to human appeal. Our future technique will then be based on a structural concept of the individual as well as society at large. Our present method as exemplified in "The Handbook of Sales Management" is an assembly of experience experimental in content. The driving force of science, the law of average, and fundamental economic laws have not been utilized to lend conviction as to the fundamental principle at issue. Consequently there is a lack of security as to just the right method to pursue with respect to the future.

The truth of modern advertising efforts is to be discovered in the laws of mind. Costs are to be reckoned as percentage of anything only as they reflect a scientific program in accord with the structure of our minds to get over the message intended. Information and description of all the factors involved go without saying. Science and the fundamental laws of economics give us the only valid explanation of our problem in advertising.

The pressure of modern business is for policies in accord with maximum profits. A new man is rising. To my mind his method is in direct contradiction to the present one of assembled empiricism. The struggle is on.

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In other words, books of the nature of "The Handbook of Sales Management" are what the subject indicates. They are suggestive in that they show experience up to date with an effort to get at economic principles. Books of this nature are invaluable to those who are so dispositioned that they need the authority of others concretely visualized before acting at all. But to the mind capacitated to think in terms of principle and science the book becomes too cumbersome. The "new kind of salesmanship" mentioned in the introduction of the book seems to many of us to demand a more fundamental conception of the philosophy and modern sciences back of modern selling effort. To my mind, S. Roland Hall's "The Handbook of Sales Management" will do much to lead the concretist to the place where he will be forced to recognize the necessity for more fundamental concepts back of modern business organization. Thus books of this nature represent the transitional stage in which a subject and author find themselves.

To those whose grasp of economic principles is fundamental and whose sciences are definable into a technique for the "newer sales management," the innumerable charts and diagrams afford valuable informative and descriptive matter. These charts become exceedingly valuable in illustrating to doubting Thomases the more fundamental principles at issue.

The chapter headings are most comprehensive in their analysis of different aspects of sales management. Just as comprehensive are the kind and number of concerns in the United States which out of the richness of their classifiable experience are willing to pass the information on to others. Business managers will often be able to compare their own experiences with others. At this point, however, criticism might be made in that many businesses are not comparable.

Coming writers whose emphasis is for a text reduced to pure principle will find this book an invaluable aid in helping them to evaluate and to correlate fundamental principles in this newly developing field.

HERBERT W. HESS[1]

Textbook of Industrial Cost Accounting. By Paul M. Atkins, McGraw-Hill Book Company, Inc., New York, 1924, pp. 396.

There is a great deal to be said in favor of the "Textbook of Industrial Cost Accounting," by Paul M. Atkins.

The arrangement of the material of the book is excellent. The principal problems of cost accounting are taken up in the order in which they must ordinarily be considered in the case of an actual cost installation. This excellent arrangement of material, supported by the thorough treatment that is given to the cost problems usually incurred in practice, make the book a valuable contribution to the work of practical costing as well as to the work of classroom instruction for which, according to the preface, the book was primarily intended.

At the end of each chapter there is a series of review questions which might be used to good advantage for the purpose of classroom discussion. In connection with these review questions the author has also outlined practical exercises in which the student is directed to apply the theories advanced by the chapter to the problems of some manufacturing concern with which he is familiar.

Throughout the work the author stresses the important fact that accounting is simply a means, a statistical means, to the great end of useful management information. As he says, "At all times it should be remembered that this department (cost department) is a service department and that the only reason for its existence is the aid which it can give to the operation of the business." He also makes it clear that the starting point of any successful cost system is a thorough understanding of the problems—manufacturing, selling, and administrative—of the enterprise to which the system is to be applied. The dangerous tendency of practical accountants, involved as they are with statistical detail, is to come to look upon accounting as a mathematical refinement that bears only an incidental relationship to the actual work of producing and selling merchandise. Although the efficiency of accounting forms and methods requires a great deal of care and study, it is the information that these forms and methods will provide the management that determines the success or failure of the system. To this fundamental problem Professor Atkins has contributed many helpful suggestions.

In Chapter I the principal purposes to be accomplished by cost accounting are outlined, with special emphasis on the use of unit costs. In Chapters II, III, and IV, a detailed survey is made of the elements of industrial cost, the cost records and business functions. In place of the customary terms "Materials," "Goods in Process" and "Finished Goods," the author introduces and explains the more modern and scientific terms "Stores Materials," "Worked Material," "Worked Material in Process," "Merchandise in Process," and "Merchandise." In Chapter V a section of the Organization Manual of the American Metal Work Company is reproduced, and in Chapter VI a number of accounting forms now being used by leading manufacturing concerns are illustrated.

The problems involved in the purchase, handling and accounting of materials, and the relative advantages and disadvantages of various methods of pricing materials issued are discussed in Chapters VII, VIII, and IX. Chapters X and XI are devoted to methods of wage payment, the calculation of wages, the preparation of the payroll, and the distribution of labor charges. Chapters XII to XX contain a detailed discussion of all the various problems of analyzing, recording and controlling expenses. Here a number of practical hints are provided for the work of classifying the expenses of a manufacturing plant, and the use of mnemonic symbols is illustrated in this connection. The author makes some useful suggestions also in regard to the analysis and control of the expenses, which ordinarily vary in a more or less denite ratio with the volume of business done, and includes a discussion of the scheduling of expenses for budget purposes. Chapter XIX, "Interest as an Element of Cost," contains a very complete statement of the principal

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